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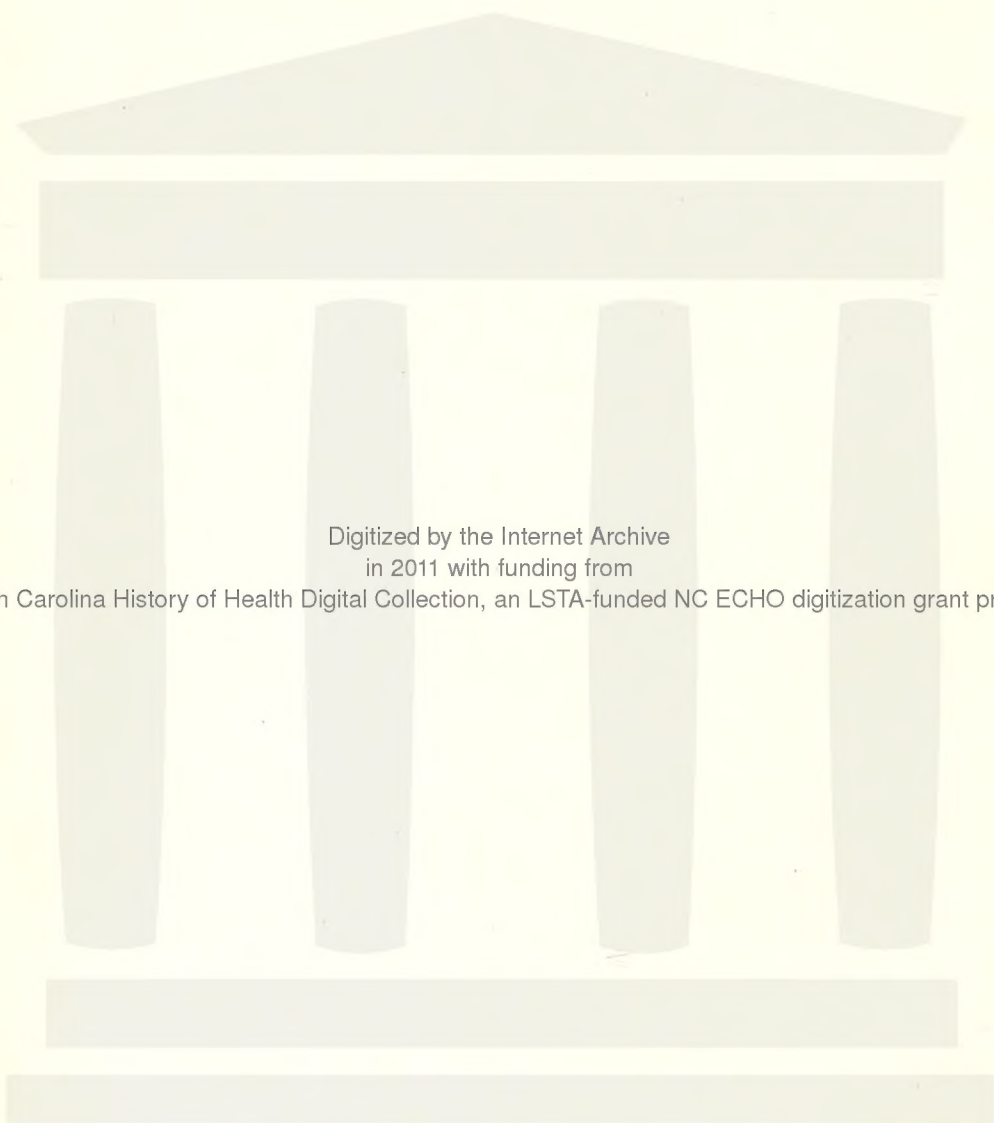
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NUMBER 1

SOME PROBLEMS OF THE RURAL GENERAL PRACTITIONER

B. B. DALTON, M.D.

ASHEBORO

My discussion today is not based on any scientific experiments that I have done, for the rural general practitioner has no time to do these. The conclusions I will present are gathered from my own experiences while doing general practice in a rural area for approximately ten years since graduating from Duke in her first class of 1932.

Selecting a Location

In selecting a suitable place to locate, the rural general practitioner has a world of territory from which to choose. It is extremely important that he make a wise selection, for once he is established, he will find it very difficult and costly to move elsewhere. He must consider carefully the type of people who make up the community in which he is to live and educate his children, and the source from which these people derive their income. Is this income seasonal, as in a farming area, or steady as in an industrial community? Is the population a shifting one made up largely of tenant farmers who move away every year before paying the doctor's bill, or is it a population of home owners who are more responsible? Are hospital facilities, specialists for consultation, and medical centers within reasonable distance? Are the roads such as would not tear up a \$1500 automobile in making a \$5.00 call?

Learning to Do without Hospital Facilities

One of the greatest problems of the rural general practitioner is learning to get along without the consultations, x-rays, laboratory aids, and other hospital facilities that had

been available during his medical training. It is surprising how often these aids can be dispensed with by exercising the skill and judgment which come with experience. Patients can be saved much time and money by not having all the hospital "routine" expenses and the group "consultation" fees forced upon them. Yet the rural general practitioner must be keen enough to recognize the patient who needs more detailed study and refer him to a medical center.

Hospital insurance is no doubt a great boon to the patient, but it becomes a nuisance at times to the rural general practitioner who does not have access to a hospital, or who lives too far away to treat his patients profitably in a hospital. Regardless of how trivial the illness or ailment may be, many patients want to go to the hospital to reap the benefits of this insurance, and they expect the doctor to make the diagnosis grave enough to get them into a hospital.

Prescribing Drugs

Unless the general practitioner is conscientious, his patient's bill at the corner drug store will offset the savings made by eliminating routine diagnostic tests. Patients in rural communities have a strong tendency to evaluate the doctor, not according to his capabilities nor his years of special training, but according to the number of prescriptions he writes for their simple ailments. In the hospital he can prescribe only what the patient needs; in the home he must prescribe what the mother, grandmother, and medical advisers to the family think the patient needs. In the hospital he can order Arm and Hammer soda and aspirin; in the home he

must write prescriptions for "sodii bicarbonatis" and "acidi acetylsalicylici" and send someone ten miles, perhaps in the middle of the night, to wake the druggist and have the prescription filled. He must do this, that is, if he expects his patient to get soda and aspirin. Did any of you fellow general practitioners ever hear a patient say: "I had Dr. So-and-So the last time, but he didn't do nothing but leave a handful of pills and tell me to take a teaspoonful of soda three times a day"?

Let me mention one of my own mistakes as an illustration. During a deep snow I was called to see a 10-year-old boy who was running a high fever. The father met me with a two-horse wagon to carry me from the highway about a mile to the little farmhouse, where I made a diagnosis of acute rheumatic fever. They had soda. I had aspirin. But I made the mistake of calling it aspirin. When I came back to see the patient two days later, I learned that the mother had not followed my instructions to give him two aspirin tablets every four hours because she knew his heart would not stand it. Since the parents wanted the boy to be in a hospital, he was carried in the wagon through the snow to the highway, transferred to a car, and taken to a hospital twenty miles away—where the doctor ordered three aspirin tablets with soda every four hours. But I was labelled the "aspirin doctor." This experience was a great lesson. I had been taught nothing of this kind in medical school.

Before the days of sulfonamides, I have sat in profound study for minutes beside a child with bronchopneumonia. It takes profound study to write at least three different prescriptions that will do no harm to a very sick child who is perhaps already distended and vomiting and needs only sensible nursing care.

Combatting Medical Superstitions

The rural general practitioner's ingenuity is sometimes severely taxed to see that his patient gets the prescribed medical treatment rather than treatment by old charlatan ideas and superstitions. Most doctors now have repudiated bleeding and purgation as methods of therapy. Most laymen have forgotten the former method, perhaps because they could not carry out the technique nor endure the sight of blood; but with the aid of the radio they have "brushed up" on treat-

ment by purgation.

In hospital treatment the physician is amused by some of the medical superstitions he encounters, but he dismisses them with a nod of the head and treats the patient according to his own dictates. In general practice these old, well established beliefs are not so easily brushed aside. Allow me to mention some of the superstitions which I have encountered in my own experience:

Warm urine instilled into the ear of a child will relieve earache; the juice squeezed from a fat bedbug into the ear canal is also good for this pain. "Sheep-ball tea" is administered to a child to "break out" the measles. Good treatment for a cold is to take a shoe string out of a dirty shoe, tie nine knots in it, and tie the string around the neck. Collard leaves are applied as a poultice to a breast abscess. There is no end to the various kinds of poultices used in pneumonia, colds, and bronchitis. When one walks into a room heated to about 90 F., with every door and window closed and every crack chinked, to find a small child well wrapped in an onion poultice, covered with several thicknesses of flannels, union suits, and blankets, he is amazed sometimes to find that the parents do not want to expose the child by removing this covering even for a brief examination. He is allowed to auscultate a few square inches at the time, covering this area to expose a few more square inches of chest. On one occasion I was called to see a Negro man who had been treated for pneumonia for several days by the family and their medical advisers. Their diagnosis was right. The patient was comatose and dehydrated, with a temperature of 105 F. His entire chest was coated with a snuff-and-kerosene poultice, which had to be scraped off before an examination could be made.

I was once called to see two small children with whooping cough. After spending some time in giving general instructions as to the best care of the children, I began writing a prescription. The father stopped me: "Doc, if it's whooping cough I don't want no medicine. I know what'll cure it." "What's that, Rufus?" I asked. "Mare's milk, and I know where I can get some." The mother, who began crying when she was told that one child also had pneumonia, was comforted by the father, who said: "Shet your mouth, Rosie. If they die you can git you a job in that new

hosiery mill." Yet our State Board of Health is concerned about lack of proper medical attention as a cause for our high infant mortality rate! About two years later, I delivered this same woman of triplets with congenital syphilis.

Only the general practitioner knows how often the burned patient is taken to some old colored woman in the community who has the divine power to "talk the fire out" of the burn. Two or three days later, when the burn is badly infected, the patient is brought in to the doctor. New-born babies are frequently resuscitated by mouth-to-mouth breathing. This is also a widely used cure for thrush. Trench mouth in larger children is often diagnosed as thrush and is treated in this way. I remember in particular one old colored man who could "talk the fire out" of a burn and could also cure the thrush with his breath. This man had a mouth full of badly carious teeth and pyorrhea. Two of his children had active pulmonary tuberculosis. A year ago I treated a child whom he had failed to cure of "thrush." This child had a severe Vincent's infection of the mouth.

I have seen an axe with the blade pointing upward placed under the bed of a woman in labor to "cut the pains." Upon accidentally knocking this over with my foot, I was asked by the woman to set it up again before another pain hit her. This I did with my "sterile" glove on. This incident reminds me that I once asked a general practitioner in Durham if he wore gloves in performing a home delivery. His reply was: "Well, not if I get there in time to take my gloves off first."

Practicing Obstetrics in the Home

Doing obstetrics in the home, which makes up a large proportion of the general practitioner's practice, also has its problems. On one occasion I remember straining the tadpoles out of the spring water before putting it on to boil. One husband wanted his wife to go to the hospital to have her baby because there she could receive penicillin to make her labor easier. The problem of handling toxemia, placenta praevia, and other complications is dependent on the general practitioner's ability to diagnose these conditions early and get the patients into a hospital. Of course, one of these complicated cases occasionally has to be cared for in the home.

Some women will call the doctor, regardless of the time of day or night or the distance, at the first suggestion of a labor pain, because they want the doctor to tell them whether or not they are in labor and just how long it will be before the baby will be born. The doctor is expected to sit by until this event occurs. If he makes an excuse to leave to return later, some woman in the crowd gathered for the occasion will speak up to comfort the patient and doctor by saying: "Dr. So-and-So went off and left me one time, and the baby was born before he got out of sight, and I nearly bled to death. The cord was around the baby's neck twice and he almost strangled." Other patients will have pains for hours and give birth to the baby in bed before even thinking of sending for the doctor.

After practicing in the same community for ten years and attending the same women at several deliveries (some of them as many as ten times), the doctor can develop the knack of getting there just at the right time. I remember that one Sunday I delivered five babies in four counties, went to church in the morning, and took my family on a picnic in the afternoon. Of course, I started early that Sunday and finished late.

Conclusions

I could ramble on and on about my experiences in general practice, but here I have mentioned only a few that linger in my memory. I do not mean to paint a dark picture, for this type of work requires intuition and initiative never dreamed of by the specialist. The rural general practitioner is held in the highest esteem. His advice is often sought in fields remote from the practice of medicine. He is loved and honored by those who have faith in him, and he derives an indescribable pleasure from being able to serve these people—to give them the kind of service that is really needed and appreciated.

Leadership in human relations concerned with health and the control of disease should come from the medical profession. By training and experience and by intimate and sympathetic contact with their fellow men, physicians are close to human problems—the hopes and fears, the traumas and diseases which daily bring so much unhappiness and so much destruction to human life. Because of these qualifications society looks to physicians to direct the search for better methods in the control of disease, and for the building of a more vigorous and healthy population.—Edward L. Bortz: Medical Statesmanship, M. Ann. District of Columbia 16:651 (Dec.) 1947.

THE INTEGRATION OF A PUBLIC HEALTH PROGRAM WITH THE PREVENTIVE ASPECTS OF PRIVATE PRACTICE

GEORGE T. HARRELL, M.D.
WINSTON-SALEM

The practice of medicine traditionally has been based on a personal doctor-patient relationship. The value of this relationship has been proved by the accumulated experience of many years. The high standard of medical care which has developed out of it in this country has been thoroughly tested during the recent war and is now recognized the world over. The personal doctor-patient relationship has proved so effective because the diagnosis and therapy of disease must be individualized.

Recent discussions, which sometimes have generated considerable heat, have centered around the allegedly inadequate number of doctors and the poor distribution of medical care. These arguments have neglected an old folk-saying which may be applicable: "An ounce of prevention is worth a pound of cure." An effective program for the *prevention* of disease would increase the efficiency of the practicing physician, make his life more pleasant, and give him the *time* which he needs to provide better care for his patients.

Most disease is an individual problem, but some diseases, because of their mode of transmission, may be better considered with the family as the unit rather than the single patient. Other diseases must be considered at the level of the community, since their control is beyond the scope of the physician in private practice. The control of such diseases usually requires special training on the part of physicians charged with their prevention; legal backing is essential to enforce the necessary measures. These requirements have been recognized for years and have been excellently met by public health departments.

The Present Role of Public Health Agencies At the community level

The control of water supplies, sewage disposal, and the handling of food are generally

accepted as fields of activity for a public health department. The control of milk is an excellent example of the careful supervision of food. The supervision extends to the source, with tuberculin testing of the cow and inspection of the dairy. The milk is followed through the process of pasteurization and bottling, and its distribution to the ultimate consumer by the store, delivery truck, or waitress in a restaurant is supervised. The meticulous application of the principles of disease control by such techniques has resulted in a phenomenal reduction in the incidence of typhoid fever and other enteric infections. The increase in the average life span over the past two generations has resulted largely from the reduction in infant and child mortality from food- and water-borne diarrheal infections.

The control of vectors of disease—especially the arthropods such as mosquitoes, ticks, flies, lice, and fleas—and of the animal reservoirs of disease—rats, rabbits, and dogs—is accepted as part of the field of public health. Such diseases as malaria and endemic typhus have been eradicated in some communities by the application of proper measures.

In more recent years industrial hazards have been included in the scope of a public health program. The recognition of the problem and the correction of the industrial technique or process at fault have reduced the incidence of occupational diseases. Silicosis is a good example.

At the family level

The control of disease in which the community has an interest through the public health authorities overlaps the field where the family is the unit. The science of genetics can be applied to the control of diseases which are transmitted hereditarily. North Carolina has led in a far-reaching program of sterilization and contraceptive advice in this field, though in recent years we have not applied our existing laws as fully as we might have. Congenital infections, notably syphilis, are diseases in which the community has an interest, since the infected child may later become a public charge; by enforcing the proper treatment of syphilis during pregnancy, the community will be saved from having to support the victim of congenital syphilis in a psychiatric institution for many years later in life. The control of other infections, such as tuberculosis, fre-

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From the Department of Internal Medicine, Bowman Gray School of Medicine of Wake Forest College, and the North Carolina Baptist Hospital, Winston-Salem, North Carolina.

quently is beyond the economic means of a family. The community is interested not only in isolating the infected individual and preventing new infections in the remainder of the population, but also in treating the patient so that he may quickly become self-supporting again. Since the cost of treatment for this infection extends over months or years, the community has accepted a financial responsibility for tuberculous patients.

Psychiatric disturbances have been recognized as a problem for the community. The cost of custodial care and therapy is frequently beyond the means of a single family. The techniques necessary for proper care or for therapy are beyond the facilities and knowledge of the family and, frequently, of the family physician. The public agencies should attempt to prevent the development of similar diseases in other members of the family and to restore the affected individual as quickly as possible to a self-supporting status.

In more recent years ordinary physiologic processes—such as pregnancy—have been included in public health programs. Maternal and child welfare projects have received increasing financial support.

At the level of the individual

A public health program overlaps the work of the private physician at the level of the individual, as well as at the family level. A single patient with an infectious disease may possibly expose the community to an epidemic. The public health authorities are charged with determining the magnitude of the problem, isolating the infected individual, and tracing contacts and carriers. These measures are beyond the jurisdiction of the family physician, since he has no legal authority to enforce isolation or the examination of contacts.

When disease is spread by personal contact of individuals, therapy as well as detection and isolation has been included in the field of public health; adequate early treatment will reduce the number of contacts and also the number of serious late complications for which the community may have to provide. This principle is most clearly illustrated by the compulsory venereal disease treatment programs.

The immunization of individuals against the acute infectious diseases—such as smallpox, diphtheria, typhoid, and whooping

cough—is of paramount importance in the field of public health. North Carolina has taken the lead in a forward-looking program of compulsory immunization of preschool children. The public health authorities prepare the materials for immunization, furnish them to the family physician for use on his patients, and actually perform the procedure for those persons who, because of their economic status, hesitate to seek the services of a private physician.

The Future Role of Public Health

In the past the advances in preventive medicine have been made chiefly in the control of the infectious diseases of childhood and early adult life. Because of the effectiveness of this program people are living to an older age, and the degenerative diseases (such as the disturbances of the cardiovascular system) and cancer have replaced the infectious diseases as the most frequent causes of death. The emphasis in a public health program for prevention of disease must change with the alteration in the causes of death. The old programs which have proved so effective must not be discarded, but should be revised in the light of new knowledge.

To demonstrate the way in which the thinking of individual physicians can be applied to the prevention of disease, the last graduating class at the Bowman Gray School of Medicine was asked to discuss the preventive aspects of some case they had seen on the wards of the North Carolina Baptist Hospital, as part of their final examination in preventive medicine. Twenty of the thirty-eight students discussed problems falling within the field of internal medicine. Surprisingly enough, however, almost half the students (eighteen) discussed cases in other fields—obstetrics, surgery, urology, psychiatry, and even otolaryngology. Twenty-two of the thirty-eight cases discussed were infections—a reflection of the proved effectiveness of preventive medical programs in infectious disease. A number of students, however, discussed cases of neoplasms, developmental abnormalities, and metabolic and functional diseases. Only thirteen of the thirty-eight answers concerned diseases which are generally accepted as the responsibility of the community as a whole. The other two thirds were cases which should be

approached at the level of the family or of the individual—the field of the family doctor and the private practitioner of medicine. This demonstration of the progressive thinking of medical students, in the light of the changing character of the diseases which cause death, indicates that control of community, family, and individual problems in disease should be more closely integrated.

Extension of the present program for control of infections

The beta hemolytic streptococcus is extremely important in the production of nephritis and rheumatic fever; recurrent streptococcal infections result all too frequently in far-advanced lesions. Up to the present, however, no effective means has been devised for the control of respiratory infections; methods which have proved effective for enteric bacteria are not applicable.

During World War II considerable research was done on preventing the transmission of respiratory infections in public places. The aerosols of propylene glycol and triethylene glycol are effective in reducing the number of respiratory organisms in the air. These agents in the vapor phase are active in concentrations as low as 1:300,000,000 parts of air. It is possible to adapt the techniques of glycol vapor dispersal to air conditioning systems in public places. The control of pyogenic organisms from the respiratory tract by the oiling of blankets, draperies, carpets, and floors—a technique developed in surgical wards—could be applied to hotels and other public living places.

Immunization against influenza viruses A and B with the new chick-egg vaccine gives promise of reducing the severity and frequency of severe respiratory infections.

Furnishing of services for the private practitioner

The new North Carolina medical care program passed by the last legislature provides for the establishment of health centers which will include the local public health agency. Again North Carolina has the opportunity to blaze a new trail and to assume leadership in advances in disease control. The public health agencies should furnish laboratory services which are beyond the facilities of the private physician or small hospital. The unavailability of properly performed laboratory diagnostic procedures is a well-

recognized defect in our present distribution of medical care.

Programs to confirm the diagnosis of a *suspected disease*, such as serologic testing for syphilis and the examination of sputum for acid-fast organisms, might be expanded and decentralized. Some surveys have shown that 3 out of 100 random samples of sputum from patients with chronic productive cough will be found positive for acid-fast organisms. In North Carolina 14 per cent of 8680 specimens examined during 1946 were positive; most of the specimens were from persons upon whom the diagnosis of tuberculosis had already been made. A wider search for cases of tuberculosis in which the differential diagnosis cannot be made by the x-ray alone would seem worth while. In a recent North Carolina survey 3 per cent of the chest films showed x-ray changes which justified intensive study.

Such useful new techniques as the vaginal smear stained by the Papanicolaou technique could be made more widely available for the detection of genital carcinoma in the female. From time to time new methods will be developed which could properly be added to the services of a diagnostic laboratory.

The use of diagnostic facilities for the detection of *unsuspected disease* could be expanded. Case-finding surveys by routine serologic testing and routine x-raying of the chest are being performed. Such programs must not be carried out once as a dramatic demonstration, but must be frequently and regularly repeated. The services of a psychologist in each local school system would be useful in the detection of early mental abnormalities. During this stage a psychiatric disturbance might be reversible, but after it has continued for years correction is often impossible. A mentally defective child left in the home and in regular school classes may precipitate serious disturbances in other children which could be prevented.

Laboratory services for the *control of therapy* should be available. The figures cited above indicate that physicians in North Carolina are properly using facilities for sputum examination to detect acid-fast organisms. The development of new and highly specific chemotherapeutic agents focuses attention on the great need for adequate bacteriologic cultural studies. At present chemotherapy is based on trial and error. Since time is of

the greatest importance in the treatment of acute infectious diseases, however, the selection of the proper drug on the basis of bacteriologic studies would greatly improve the efficacy of treatment. The technical difficulty of keeping media fresh while studying a small number of bacteriologic cultures makes it difficult for physicians to have this service adequately performed at present.

Expansion of health education programs

The current shortage of nurses has greatly handicapped the work of the practicing physician. During the war it was learned that by new techniques in education intelligent laymen could be trained in the care of sick people much more quickly than was formerly thought possible. For instance, nurses' aides were trained within a period of weeks to perform satisfactorily most of the duties of graduate nurses in general community hospitals. Could a public health department, in cooperation with the practicing physicians, utilize such teaching techniques to educate the community better to understand disease and how to cope with it?

Health education of children could be started in the grammar grades with simple biologic demonstrations, and continued with a carefully graduated curriculum through the high school to include adequate premarital instruction. The present attitude that premarital instruction should be given only in colleges does not squarely face the facts. Only 30 per cent of children who enter the first grade in North Carolina graduate from high school, and only 25 per cent of these go to college. The period of compulsory attendance has recently been raised from 14 to 16 years, so that more pupils may be expected to graduate from high school. The number of children borne by girls of high-school age is considerable. In the first three months of 1947, 2253 babies were born to girls 18 years of age or under; this number was 10 per cent of the total number of deliveries in North Carolina.

The general principles of disease could be adequately covered in the schools. Included in the discussions of infectious diseases should be information on the modes of transmission of the venereal diseases. In 1946, 19.7 per cent of all venereal diseases reported in North Carolina were in children 18 years old or under. The health education

program in the schools should encourage children to go to their family physician for more detailed and individualized instruction on the basis of their personal situations and needs. Programs of education by special health educators trained in the School of Public Health at the University of North Carolina have already proved in communities like Winston-Salem the feasibility of such a plan.

The education of school children is not enough. The *education of adults* could be conducted by the practicing physicians of a community in courses sponsored by the public health authorities. Community discussions would be more effective if the family doctors participated in them than if they were conducted by the health department alone. A continuing program of adult education in general principles of disease and in specific problems could be carried on throughout the years at the health centers.

The community and family problems in disease which could be explained by such techniques are numerous and obvious. Community education could be profitably carried further—to the level of the individual. A discussion of nutrition should include not only deficiency diseases, which will reflect in the entire family the meals poorly planned by the mother, but should also bring out the dangers of over-nutrition. The increased susceptibility of obese individuals to hypertension and diabetes could be stressed, and the dietary measures to prevent their development could be outlined. The nutritional principles to be followed during pregnancy to prevent the development of toxemia could be taught in general courses, as well as in the prenatal clinic. Mothers could be shown that the preparation of infant formulas and the proper care of foods for children are not rituals to be blindly followed, but are measures to prevent diarrheal diseases, as well as rickets, scurvy, and other nutritional deficiencies.

Community-wide education would result in more intelligent and effective *home nursing*. The efficiency of nurses' aides during the emergency of the war has demonstrated how effective such a program could be if carried back into the home. Imagine the effect on the community if courses of home nursing at the professional level of the nurses' aide were continued for a genera-

tion. The better observation of the early symptoms and signs of an illness would help the family physician to make an accurate diagnosis on his first visit. The more intelligent execution of orders would result in better application of therapy. The time required of the doctor would be decreased. Prevention of the transmission of infections to other children or adults—and hence back to the school or factory—would result in less total illness in the community.

The custodial care of patients with degenerative diseases is not now considered to be a problem of the community, unless a psychiatric disturbance is present. Elderly patients with such diseases are now poorly cared for in the home. An adequate program of home nursing would greatly reduce the requirements for medical care at the level of the physician. Needless duplication of effort on the part of physicians, brought about by the "shopping around" of patients with hopeless conditions—such as those resulting from strokes—could be largely eliminated. Any well trained family doctor can adequately handle such problems, but failure to understand the nature of the underlying disease process sends the patient and his family from clinic to clinic and from doctor to doctor. If the same amount of the doctor's time were distributed among patients who could be helped, the remainder of the community could be given better medical care. By the same line of reasoning, reassurance of the psychoneurotic patient by his own family physician would be much more effective if the patient and his family had a better understanding of the psychoneuroses; correction of the public's ignorance on this subject would prevent much useless waste of the doctor's time.

These measures could be accomplished only by a long-range program of health education vigorously pursued over a period of fifteen to twenty years. This would require effective cooperation between the practicing physicians in the community and the public health department. The wide dissemination of medical knowledge thus accomplished would result in the goal all physicians seek—improvement in the health of *all* the people.

Summary

Disease may be controlled at the level of the community, of the family, or of the in-

dividual. The present effective programs for the prevention of infectious diseases should be continued and should be constantly revised as new techniques are developed.

The increasing importance of the degenerative and neoplastic diseases as causes of death indicates the need for a revision of emphasis in the public health program.

Public health agencies should extend the laboratory services available to physicians for the diagnosis of disease and the control of therapy where local facilities are inadequate.

A graduated program of health education, starting in the grammar school, continuing through high school, and including the adult population of the community, would greatly increase the effectiveness of the doctor's time.

A closer integration of the activities of the family physician and the public health agencies will result in better health for the people.

The statistics quoted in this article were supplied by Dr. C. P. Stevick, collaborating epidemiologist and acting director, Division of Vital Statistics, North Carolina State Board of Health; Dr. John H. Hamilton, director, State Laboratory of Hygiene; and Clyde A. Erwin, state superintendent of public instruction.

The Secret of Good Public Relations—The principal quality that distinguishes the successful from the less successful doctor of medicine is not as would be supposed, clinical knowledge, but interest in the patient. This interest reflects itself as concern with the immediate medical problem as well as the general social problems of the patient who presents himself.

It is a flaw in our present system of education of medical students and interns that we stress what they can obtain from the patient in knowledge as to diagnosis and treatment and fail to inculcate a feeling as to what the doctor can give to the patient. Yet the patient who pays the fee comes to his doctor to obtain a service that cannot be divorced from a strong feeling of interest in the person.

This is not to decry the importance of thorough training, the grasp of fundamentals which are necessary for proper treatment and diagnosis. Many doctors are superbly equipped with this clinical facility yet cannot understand why patients pass their door to go to the office of one less well equipped. As long as we have free choice of physician (and God grant this American right will prevail as long as our current system of government) the patient is going to seek the services of the physician who is most interested in him.

All of us are guilty of erring in lack of sufficient interest in our patients to some degree. Political medicine would foster this defect. Wherever political medicine has been tried, this lack of interest on the part of the physician has been the principal objection the patient has made to the system.

Every doctor is interested in his patients, too many of us are guilty of failure to show it.—Editorial by Ralph A. Johnson in *Detroit Medical News*, quoted in the *Ohio State Medical Journal* 43:1270 (Dec.) 1947.

THE EARLY DIAGNOSIS OF UTERINE MALIGNANCY

THOMAS LESLIE LEE, MD.

and

H. FLEMING FULLER, M.D.

KINSTON

During 1946 approximately 181,000 people in the United States died from cancer. About 20 per cent of this number, or 36,200, died of cancer of the uterus. In North Carolina during 1946 there were approximately 2,500 deaths from cancer, and about 500 women died of cancer of the uterus. The annual death rate from cancer has continued to rise since 1900. It is now exceeded only by heart disease as a cause of death. Many factors may be responsible for this rise. Chief among these are the facts that more cases of cancer are being recognized and that the life expectancy of our population has been increased. The number of people who live past 45 to reach the "cancer age" is almost three times as great now as in 1900. Whatever the cause of the increased death rate from cancer, however, it behooves us to reduce it as much as possible.

If we are to cure cancer and reduce the mortality rate, we must diagnose cancer early and institute adequate treatment immediately. Early diagnosis of uterine cancer will be accomplished in three ways: (1) education of the public in the early signs of cancer; (2) education of the profession to *examine* women presenting themselves with irregular or abnormal menstrual bleeding, especially after the menopause; and (3) periodic pelvic examinations.

Many uterine cancers could be prevented by periodic pelvic examinations and good postpartum care. It is the duty of the physician attending any obstetric patient to see that patient six to eight weeks *post partum*, do a pelvic examination, and correct any abnormalities present. The use of the nasal-tip cautery to treat the cervical erosions so frequently seen will prevent many cases of cancer of the cervix.

Cancer of the uterus is not difficult to diagnose, and the primary symptom—irregular vaginal bleeding—is known to most physicians and to most laymen. The American

Cancer Society is doing an excellent job in educating the women of America to recognize the early symptoms of cancer of the uterus. Why then do we see so many late cases of uterine cancer? There are two primary reasons: (1) failure of the patient to consult a physician when the known symptoms of cancer first appear, and (2) failure of the physician to pay proper attention to these symptoms when the patients present themselves. Too often a patient with irregular menstrual bleeding is told by her physician that her symptoms are due to the change of life and that no examination is necessary. *All cases of irregular vaginal bleeding must be considered as due to a malignancy until they are proven otherwise.* The physician must come to realize his responsibility in preventing deaths from cancer.

Factors Predisposing to Uterine Malignancy

In the female the uterus is the most frequent site for the development of cancer. About 25 per cent of all cancers in women are of uterine origin. This fact is not surprising, since trauma and irritation are known to be factors in the development of malignancy, and since childbirth necessarily results in trauma to the cervix. The fact that a woman has not borne children, however, does not make her immune from cervical cancer. Ten per cent of all cervical malignancies occur in nulliparous women.

The cervix is a most unusual organ histologically. In a space of one and a half inches there exist three distinct types of epithelium—squamous, columnar, and cuboidal. Nowhere else in the body does such a condition exist. The most frequent site for the development of cervical cancer is the junction of the squamous and columnar epithelium, which is situated at the outer edge of the external os. This area is the site of much trauma in childbirth and much irritation from the vaginal secretion. The hydrogen-ion concentration of the vagina changes with each menstrual period, and with many diseases. This change may be a factor in producing irritation and malignant changes in the epithelium of the cervix. Hypertrophy of the columnar epithelium resulting in cervical erosion is a frequent gynecologic finding. Cervical cancer is apt to develop in these eroded areas.

The epithelium of the corpus is not subject

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to as much trauma and irritation as is that of the cervix. Neither is cancer of the corpus as frequent as cancer of the cervix. The lining of the corpus, however, is subject to constant progressive and regressive changes, and malignancies do develop in this area. The corpus is very frequently the site of a benign new growth in the muscle tissue—fibromyoma. When a fibromyoma is found in a patient with abnormal bleeding, the tendency is to cease to look for malignancy. Adair⁽¹⁾, however, found that 2 per cent of the uteri removed because of fibromyoma contained a complicating cancer of the corpus. Thirty-eight per cent of the uteri removed for cancer of the corpus contained a fibromyoma. It is thus apparent that every uterus removed at operation should be opened and inspected for malignancy immediately after its removal.

The fact that a woman has had her uterus removed may give her a false sense of security as to the development of cancer. In about 2 per cent of the patients who have had a supravaginal hysterectomy, however, cancer of the cervical stump develops later. Thus, when the patient's condition warrants it and the operator is capable, panhysterectomy is preferable to subtotal hysterectomy. If it is necessary to perform a supravaginal hysterectomy on a patient with a diseased cervix, appropriate treatment should certainly be given for the cervical disease.

Methods of Diagnosis

Cancer of the cervix offers no particular problem in early diagnosis. It is favorably situated to allow visualization, palpation, and biopsy. The removal of a biopsy specimen from the cervix is usually an office procedure. The cervix is relatively insensitive to pain and no anesthesia is required. Schiller's test is of value in locating the area from which to take a biopsy: When a solution of iodine is applied to the cervix, the normal tissue will stain a deep brown; areas of leukoplakia, injury, and cancer do not take the stain well because of a lack of glycogen in the cells. It is important that an adequate specimen be obtained for biopsy. The specimen may be taken with a cutting current or with any of the various biopsy forceps.

Cancer of the corpus is somewhat more

difficult to diagnose early because the interior of the uterus is not easily visualized. Early diagnosis is dependent upon a careful history and painstaking pelvic and speculum examinations, followed by pathologic examination of the epithelium of the endocervix and of the endometrium. It may be necessary at times to bisect the cervix to get to an endocervical growth. Biopsy of the endometrium entails careful curettage of the entire uterus and pathologic examination of *all* material removed by the curette. This is usually a hospital procedure.

Clark's sign (bleeding resulting from the passage of a uterine sound into the endocervix or corpus) is of value in the diagnosis of carcinoma of the endocervix and fundus.

The Papanicolaou method

Papanicolaou⁽²⁾ in 1943 evolved a procedure which has added greatly to our armamentarium for the early diagnosis of uterine malignancy. His method is based upon the fact that carcinomas of the cervix and corpus are desquamative lesions; the cells are discharged either singly or in clumps in the vagina, and may be recovered from the vaginal or cervical secretions. The diagnosis of malignancy is based primarily on changes in the nuclei of the desquamated cells. The nuclei are much larger; they stain much deeper, and may show nuclear division. Special stains have been developed by Papanicolaou for staining these cells. The staining and interpretation of these slides should not be attempted by anyone but a trained cytologist. Interpretation is not for the novice.

The technique for the preparation of the slides, which has been modified somewhat by Ayre⁽³⁾, is very simple. A complete description of the procedure is given in the original article of the authors⁽²⁾. Briefly, it is as follows: A speculum without lubricant is introduced into the vagina. The cervical and vaginal mucus is aspirated by suction with a bulb syringe. It is then transferred to a glass slide, fixed in 95 per cent alcohol, and stained according to the technique of the author. Ayre⁽⁴⁾ uses a spatula for remov-

1. Adair, F. L.: How May the General Practitioner Diagnose Cancer of the Uterus, *New England J. Med.* 224:497-501 (March 20) 1941.

2. Papanicolaou, G. N. and Traut, H. F.: *Diagnosis of Uterine Cancer by the Vaginal Smear*, New York, The Commonwealth Fund, 1943.

3. Ayre, J. E.: Selective Cytology Smear for Diagnosis of Cancer, *Am. J. Obst. & Gynec.* 53:609-617 (April) 1947.

4. Ayre, J. E. and Dakin, E.: *Cervical Cytology Tests in Cancer Diagnosis*; Glycerine Technique for Mailing, *Canad. M. A. J.* 54:489-491 (May) 1946.

ing the desquamated cells from the squamocolumnar junction of the cervix or from any suspicious area which might be present.

Ayre⁽⁴⁾ has also devised a method for preserving and mailing the specimen. After the slide is prepared in the usual manner a drop of glycerine is placed over the material on the slide, and it is covered with a second slide. The slide may then be mailed to a laboratory for interpretation without the cells' undergoing degenerative changes.

This test has proven correct in about 90 per cent of the cases in which it has been employed. It lends itself to wide use in cancer detection clinics and private practice. It may contribute as much to the diagnosis of malignant disease as the Wassermann test did to the diagnosis of syphilis, and each state may maintain a central laboratory for the interpretation of slides.

Summary

Since trauma and irritation are the most important factors in the production of malignancy, many uterine cancers could be prevented by periodic pelvic examinations and adequate postpartum care, with correction of any abnormalities present.

All cases of irregular vaginal bleeding must be considered as due to a malignancy until they are proven otherwise.

A careful history and physical examination, together with a biopsy, are essential for early diagnosis of uterine malignancy.

The Papanicolaou method is a valuable addition to our armamentarium for the early diagnosis of uterine cancer.

Discussion

Dr. Frank R. Lock (Winston-Salem): The early diagnosis of malignancy is essential if we are to get good results from treatment. In spite of the widespread public campaign for education of the laity, a prolonged delay occurs between the first signs and symptoms of cancer and its diagnosis in the average case. Every article dealing with pelvic malignancy emphasizes this point. In a series of patients with adenocarcinoma of the endometrium treated at the University of Michigan, Dr. Norman Miller determined that symptoms had been present for an average of eleven months before the diagnosis was made. Our experience in Winston-Salem is similar to this.

We have only recently appreciated the asymptomatic character of early pelvic malignancy. The usual symptoms are evidence of advanced disease. The present trend is toward the diagnosis of cervical malignancy in the pre-invasive phase of the disease. At this time and during the early invasive stage, no characteristic lesion is present.

A cytologic laboratory has not been available to

us because we have not had trained technicians. We have adopted a policy of making a routine biopsy of any cervix that is sufficiently diseased to suggest the need for treatment. Almost 1400 cervical biopsies have been performed, and 141 cervical cancers have been discovered. At least 15 of the malignancies were not suspected, and were found in young women who had cervical disease typical of a benign lesion.

We cannot make a strong enough plea for careful routine inspection of the cervix and for the frequent use of biopsy. Obtaining material for a cervical biopsy is a simple procedure. The only equipment required is a simple biopsy punch, or the material may be taken with an electric surgical unit if the physician has one. The specimen is taken in the office without difficulty, and with no appreciable discomfort to the patient.

The vaginal smear technique is a splendid development in the field of gynecology. It is going to mean much to us, but until we have dependable cytologic laboratories generally available, each of us must own a biopsy punch or other equipment for obtaining a biopsy specimen, and use it frequently.

THE USE OF VAGINAL SMEARS IN THE DIAGNOSIS OF GENITAL CANCER

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and

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DURHAM

Cancer can be cured. To be cured, it must be diagnosed in its early stages.

In 1944 there were 171,171 deaths from cancer in the United States. Of these, 89,005 occurred in women. Twenty-two thousand one hundred and forty deaths were due to cancer of the genital tract. Because of this preponderance of genital malignancy in women we began the use of the vaginal smear as an aid in the early diagnosis of this disease.

The clinical use of vaginal smears dates back to 1847, when Pouchet⁽¹⁾ examined dry and unstained vaginal secretions in studying the human sex cycle. In 1917, Papanicolaou and Stockard reported the use of stained vaginal smears in demonstrating the

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*Trainee, National Cancer Institute.

1. Pouchet, F. A.: *Theorie positive de l'ovulation spontanee et de la fecondation des maniferes et de l'espece humaine, basee sur l'observation de toute la serie animale*, Paris, J.-B. Bailliere, 1847.

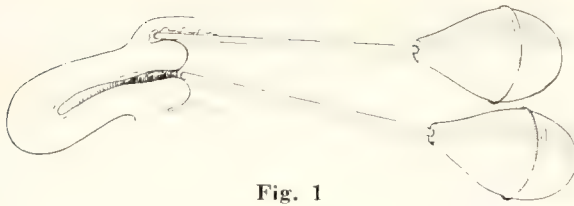


Fig. 1

estrous cycle in the guinea pig⁽²⁾. Continuing this type of work in studying the human menstrual cycle, Papanicolaou noted the appearance of bizarre cells which he recognized as exfoliated cancer cells. This finding was reported in 1928⁽³⁾. Because of the indifference of clinicians to this report, and because of Papanicolaou's increasing interest in the effect of hormones on vaginal epithelium⁽⁴⁾, twelve years passed before he again reported on vaginal smears in relation to uterine cancer. With Traut as co-author, the epoch-making monograph on the diagnosis of uterine cancer by the vaginal smear was published in 1943⁽⁵⁾. Since then, several writers⁽⁶⁾ have confirmed the observations set forth in that monograph.

Technique for Obtaining and Staining Smears

The technique for obtaining vaginal smears is quite simple. We employ a rubber bulb and glass pipette in obtaining the secretions for the smears. At least two types of smears, one vaginal and one cervical, are made on all patients over 30 years of age who come to our obstetric and gynecologic clinics. Neither of the two should be omitted. If the original smears are suggestive of endocervical or intrauterine cancer, a third type of smear is employed. This is the endocervical or endometrial smear.

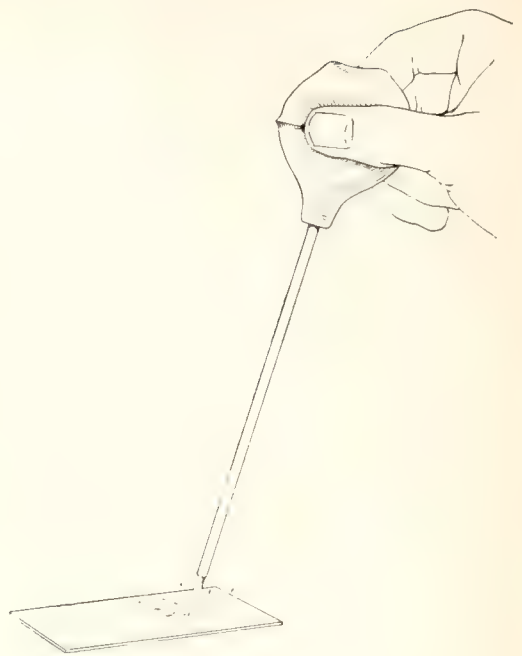


Fig. 2

The vaginal smear is obtained first by introducing a glass pipette (16 cm. long and 5 mm. in diameter) into the posterior fornix of the vagina (fig. 1). The vulva is spread with the left hand. As the pipette is withdrawn, the secretions are aspirated into it. The contents are blown on a glass slide (fig. 2) and spread thinly (about the thickness of a blood smear) with the side of the pipette (fig. 3). The cervical smear is obtained after the speculum, without lubricant, is inserted into the vagina. The pipette is placed first in the cervical os for the aspiration of secretions, and is then applied to the surface of any suspicious-appearing lesion.

When the smears are made, the slides are placed immediately in a fixative composed of equal parts of 95 per cent alcohol and ethyl ether. The slides should remain in the

2. Stockard, C. R. and Papanicolaou, G. N.: The Existence of a Typical Estrous Cycle in the Guinea Pig, with a Study of Its Histological and Psychological Changes, *Am. J. Anat.*, 22:225 (Sept.) 1917.
3. Papanicolaou, G. N.: New Cancer Diagnosis, in *Proceedings of Race Betterment Conference*, 1928, p. 528.
4. Papanicolaou, G. N.: The Sexual Cycle in the Human Female as Revealed by Vaginal Smears, *Am. J. Anat.* (suppl.) 52:519-637 (May) 1933.
5. Papanicolaou, G. N. and Traut, H. F.: *Diagnosis of Uterine Cancer by the Vaginal Smear*, New York, Commonwealth Fund, 1943.
6. (a) Meigs, J. V. et al.: Value of the Vaginal Smear in the Diagnosis of Uterine Cancer, *Surg., Gynec. & Obst.* 77: 449-461 (Nov.) 1943; (b) Fremont-Smith, M., Graham, P. M., Janzen, L. T., and Meigs, J. V.: The Vaginal Smear in the Diagnosis of Uterine Cancer, *J. Clin. Endocrinol.* 5:40-41 (Jan.) 1945; (c) Meigs, J. V., et al.: The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer: A Report of 1,015 Cases, *Surg., Gynec. & Obst.* 81:337-345 (Oct.) 1945; (d) Jones, C. A., Neustaetter, T., and Mackenzie, L. L.: The Value of Vaginal Smears in the Diagnosis of Early Malignancy, *Am. J. Obst. & Gynec.* 49:159-163 (Feb.) 1945; (e) Ayre, J. E.: A Simple Office Test for Uterine Cancer Diagnosis, *Canad. M.A.J.* 51:17-22 (July) 1944; (f) Ayre, J. E., Baile, W. A. G., and Kearns, P. J.: Test to Show Value of Cervical Cytology Smear in Uterine Cancer Diagnosis, *Am. J. Obst. & Gynec.* 50:102-103 (July) 1945.

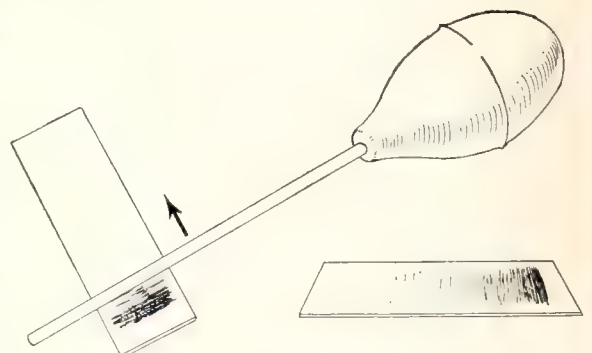


Fig. 3

alcohol-ether fixative for ten to twenty minutes in order to obtain proper nuclear fixation. They may stand for a week or ten days without deterioration.

The staining procedure, in which some twenty-five to thirty steps are required, is exacting and consists of hydration, nuclear staining, counterstaining, dehydration, and mounting. After hydration the smears are stained in Harris' hematoxylin, later in orange G, and still later in Papanicolaou's triple counterstain composed of yellowish eosin, light green, and Bismarck brown. After dehydration the smears are passed through xylol and then mounted in any one of the popular mounting media.

Thoroughly fixed smears may be stored or mailed if the smear is coated with glycerin and covered with a second slide⁽⁷⁾. Prior to staining, such smears must be treated for approximately an hour in absolute alcohol to dissolve the glycerin. This procedure does not modify the staining technique, and the cellular detail is unchanged in correctly preserved smears.

Because of the high percentage of failure in diagnosing adenocarcinoma of the endometrium by vaginal smears, Papanicolaou and Marchetti devised a technique for obtaining endocervical or endometrial smears⁽⁸⁾. For this they used a metal catheter (endotracheal) with a Luer-Lok syringe attached for aspirating secretions from the endocervix and uterine cavity. We have used this technique with very satisfactory results on most of our patients whose original smears were strongly suggestive of uterine cancer.

Ayre devised a notched wooden spatula for obtaining cervical smears⁽⁹⁾. With a rotary motion of the instrument he actually scrapes the endocervix and cervical lips. His published results are the best so far reported from the standpoint of percentage of error.

Interpretation

Whereas the technique for obtaining vaginal smears is comparatively simple, the interpretation of the smear necessitates long study and much experience. One must be familiar with all the normal surface cells of the genital and urinary tracts, and with all

the corresponding inflammatory elements, since it is possible for any of them to be exfoliated into the vaginal cesspool.

The diagnosis of cancer by the vaginal-smear technique is much more difficult than the interpretation of the changes occurring in the vaginal smears during the menstrual cycle. The latter might be compared to the differential white-cell count, the former to a bone-marrow smear.

Classification

For classification in regard to possible malignancies, the epithelial elements in the vaginal smears are divided into five types.

Type I—All epithelial cells are essentially normal.

Type II—Some cells are atypical in cytoplasmic or nuclear details (or both), but no cancer cells are present.

Type III—Cells are present which are strongly suggestive of cancer but upon which a definite diagnosis of malignancy can not be made.

Type IV—Malignant cells are present, but are few in number or of few kinds (or both).

Type V—Many cancer cells are present, often of many kinds.

Types of normal vaginal cells

The normal epithelial cells seen in vaginal smears are divided into subtypes. These subtypes are based in general upon the effects of varying degrees of estrogenic activity. Characteristic changes occur in the vaginal epithelium during the menstrual cycle, after the menopause, before the menarche, in secondary amenorrhea, and during pregnancy.

Basically, there are three types of vaginal cells. These are (1) basal, (2) intermediate, and (3) superficial. With the elevation of blood estrogen there is a shift to the superficial type of cells. When, however, the blood estrogen falls to a sufficiently low level, the shift is to the basal type of cells.

Papanicolaou⁽⁴⁾ divides the normal menstrual cycle into four phases: (1) menstrual (first through the sixth day), (2) follicular (seventh through the thirteenth day), (3) regressive (fourteenth through the seventeenth day), (4) premenstrual (eighteenth through the twenty-eighth day). During a normal menstrual cycle, it is the superficial cell which depicts the changes in the vaginal epithelium characteristic of the phase. Therefore, in the immediately following para-

7. Ayre, J. E. and Dakin, E.: *Cervical Cytology Tests in Cancer Diagnosis: Glycerine Technique for Mailing*. Canad. M.A.J. 54:489-491 (May) 1946.
8. Papanicolaou, G. N. and Marchetti, A. A.: *The Use of Endocervical and Endometrial Smears in the Diagnosis of Cancer and of Other Conditions of the Uterus*. Am. J. Obst. & Gynec. 46:421-422 (Sept.) 1943.
9. Ayre, J. E.: Personal communication.

graphs, it is the superficial cell which is described.

The follicular phase in general is characterized by deeply pink-stained vaginal cells. They have small pyknotic nuclei, abundant cytoplasm, and numerous cytoplasmic granules. A relative leukopenia prevails, and mucus, often in copious amounts, may be found during the first few days of this phase. The cells are usually separated from each other. Various degrees of cornification may be found.

The regressive phase begins the day after ovulation. One of the first signs of this phase is the rolling of cell edges. There is slight clumping. The cells begin to lose their cytoplasmic granules, and an occasional inflammatory cell is apparent. In general leukocytes are not present in large numbers in the regressive phase.

In the premenstrual phase there is a distinct change in the vaginal cells. The cells become less distinct in outline. They may be folded or have rolled edges. There is a predominance of basophilic over acidophilic cells. The nuclei are larger and there is a tendency for the cells to be exfoliated in large, dense clumps. The amount of mucus is decreased and the number of free nuclei and polymorphonuclear leukocytes is increased.

During the early menstrual phase, the smear is similar to that of the premenstrual phase except for the presence of red blood cells. As menstruation progresses, many macrophages, single acidophilic cells, and clumps of endometrium appear throughout the bloody smear.

Generally speaking, estrogenic activity wanes during the climacteric. There is a phase during the climacteric when estrogenic stimulation is no longer sufficient to result in periodic uterine bleeding, but may produce a certain degree of cornification of the vaginal epithelium. During this phase—termed “crowded menopause” by Papanicolaou—the cast-off cells are principally of the superficial and intermediate types, but are atypical in shape. The clumps have a purplish hue in the central portion of the mass. The individual cells stain lighter than those of the premenstrual phase, but resemble them very closely. There usually is a scattering of basal cells in the “crowded-menopause” smear.

The “crowded-menopause” phase is followed by one in which the estrogenic stimulation is insufficient to cause progressive changes in the basal cells of the vaginal epithelium. The vaginal epithelium of this phase is quite similar to that seen before the menarche. There is a predominance of basal cells, and many polymorphonuclear leukocytes are present. The cells are oval or cart-wheel in shape and are basophilic in reaction. The nuclei are large and may be eccentric in position. Few cytoplasmic granules are present. These cells are not exfoliated in clumps. Frequently they are highly acidophilic without any other evidence of estrogenic activity.

Alterations produced by non-malignant conditions

The characteristics of the normal phases of the vaginal epithelium are greatly altered by infection, pregnancy, abortion, estrogen therapy, or an intrinsic hyperestrogenic state.

Infections produce an abundance of leukocytes and many phagocytes. Red blood cells appear in varying numbers. The vaginal cells are atypical in regard to color and nuclear and cytoplasmic changes.

In vaginitis due to *Trichomonas vaginalis*, triangular, sharp-angled cells with deep orange-red coloration and light perinuclear halos are characteristic. The nuclei are small, pyknotic, and irregular in outline. Many free nuclei and much intracellular bacterial debris are seen. Very frequently the protozoa are present. If they are not visualized the abnormal findings are attributed, for the time being, to a non-specific infection.

In cervicitis a marked variation in the vaginal cells occurs. The cells are atypical in staining qualities, in shape, and in nuclear regularity. There is an abundance of polymorphonuclear leukocytes, phagocytes, and not infrequently red blood cells. The cervical cells are exfoliated in abundance. Many of them are normal in appearance, but many show variations in size and some are predominantly acidophilic. Among the nuclear irregularities, small pyknotic nuclei predominate, but there is also marked vacuolization of nuclei and cytoplasm. Abundant cytoplasmic granules are seen. When cervical hyperplasia is present, cervical cells appear singly or in sheets, with characteristics bordering

on those of malignant cells. When hyperkeratosis is present, the cells are fragmented; they stain a deep red-orange and may show no nuclei.

Alterations produced by malignant and premalignant conditions

Ayre⁽¹⁰⁾ has placed in a precancerous category cervical cells which show double nuclei, nuclear irregularities, and vacuolization, especially if they are associated with low thiamine excretion and high endogenous estrogens in the patient.

Before attempting to identify cancerous cells in smears one must have a knowledge of the atypical cells and changes in normal cervical and vaginal epithelium which have been indicated thus far. Normal cells of the genital tract are exfoliated at regular intervals and are of several varieties. Cancer cells are exfoliated at a more rapid rate. The cells present in the smear can be correlated closely with the cells seen in a biopsy of tissue from the same patient. The exfoliated cells are dead, of course, and very rarely show mitoses, but they do present the typical changes of malignancy.

Diagnosis of a differentiated carcinoma may be made from a smear with a single cell or a few cells, but multiple groups of cells are necessary to complete a diagnosis of an undifferentiated or anaplastic neoplasm.

Squamous cell carcinoma of the cervix: In patients with cervical cancers the vaginal smears may be of several varieties, depending on the type of carcinoma and the degree of anaplasia. Generally speaking, the vaginal exudate associated with cancer, when smeared and stained, has a coloration which is peculiarly characteristic. There is a predominance of acidophilic vaginal cells, resulting presumably from estrogenic activity. Usually red blood cells are abundant. Polymorphonuclear leukocytes, phagocytes, and cocci also are prominent. In addition to these general characteristics, specific morphologic changes are seen in the squamous cells exfoliated by the neoplasm.

Individual cancer cells show marked irregularities in size, shape, and coloration both in the cytoplasm and in the nuclei. Nuclear-cytoplasm disproportion and abnormal staining qualities of the cytoplasm and its granules are characteristic. Pericellular and peri-

nuclear membranes are very prominent. The nucleus is usually enlarged and irregular in contour. It may contain many chromatin granules and several nucleoli. The nucleus is usually hyperchromatic, and in some instances it may stain to the degree of complete opacity. Vacuolization of both nuclei and cytoplasm, with engulfed debris and blood cells, is common.

A prominent type of malignant cell is the tadpole-shaped cell with its irregular nucleus and deeply stained cytoplasm. Small cells with enlarged, abnormal nuclei predominate among the cell types seen in the undifferentiated squamous cell carcinoma.

The cellular characteristics which make possible a diagnosis of malignancy on the basis of the vaginal smear closely resemble the changes described by pathologists for the diagnosis of preinvasive cancer⁽¹¹⁾. These changes have been found to be present from eight to ten years prior to invasion. Since these changes can be seen in vaginal smears long before the lesion is clinically apparent, we feel that this method has a definite place in our armamentarium against cancer.

Adenocarcinoma of the cervix and endometrium: Adenocarcinoma of the cervix presents a characteristic smear, containing groups of closely packed, small, hyperchromatic, irregular cells. These have a close similarity to the cells of the cervical anaplastic squamous cell carcinoma. Vacuolization is frequently present, and the vacuoles occasionally contain cells or cell fragments. The nuclear-cytoplasm ratio is reversed. Although it is difficult to diagnose this type of carcinoma accurately by smear, a correct diagnosis of malignancy is usually possible.

The ratio of endometrial cancer to cervical cancer is 1 to 8. Endometrial adenocarcinoma is the most difficult of all genital malignancies to diagnose on the basis of vaginal smears, since there are many benign conditions which also cause shedding of atypical endometrium and neoplastic cells. Adenocarcinoma produces as many characteristic cell changes as does the squamous-cell group, however. The small cells have little cytoplasm, and this stains deeply basophilic. Frequently, vacuolization causes ec-

10. Ayre, J. E.: Vaginal Cell Examination as a Routine in Diagnosis, *South. M. J.* 39:847-852 (Nov.) 1946.

11. (a) TeLinde, R. W. and Galvin, G.: Minimal Histological Changes in Biopsies to Justify Diagnosis of Cervical Cancer, *Am. J. Obst. & Gynec.* 18:771-797 (Dec.) 1944; (b) Fund, E. R. and Auerbach, S. H.: Preinvasive Carcinoma of the Cervix Uteri, *J.A.M.A.* 131:960-963 (July 20) 1946.

centric and folded nuclei. Many of the cells are closely clumped and show modified anisonucleosis. Single cells have deeply stained and very distinct nuclei and perinuclear membranes. The nuclei are large and hyperchromatic, frequently black. Groups of cells have engulfed debris, red blood cells, and polymorphonuclear leukocytes. Macrophages are abundant, as in menstrual smears.

In addition to the individual cell changes, the general changes associated with malignancy are present.

Squamous cell carcinoma of the vulva: In carcinoma of the vulva characteristic cells are found in the vaginal smears. These are large, with large oval or round spoked-wheel nuclei of the vesicular variety. The nuclei have prominent perinuclear membranes and nucleoli. The cytoplasm is abundant and usually stains a reddish-pink, although basophilic cells are not uncommon.

Sarcoma of the uterus may be diagnosed by vaginal smears. The general neoplastic picture is present, in addition to longer cells with neoplastic nuclei. These elongated cells may be quite irregular in outline and may take a deep basophilic or acidophilic stain. There are also irregular, large, deeply stained masses of chromatin material without cytoplasm. Large cells which stain a muddy lavender and which have very irregular nuclei are common. Sarcomatous cells found in vaginal smears may be confused by the inexperienced worker with cells exfoliated by either the squamous-cell carcinoma of the cervix or the adenocarcinoma of the endometrium.

Case Reports

Case 1

A colored, married woman, aged 61, was seen first in our clinic on May 26, 1947. Her chief complaint was "something protruding from my birth canal for seven years." She had had nineteen pregnancies, six of which terminated in abortions. Her menopause eleven years previously had been uneventful. Four episodes of vaginal spotting had occurred during the past eighteen months; the last was ten days prior to her first visit. There was no leukorrhea. The preliminary diagnoses were postmenopausal bleeding, chronic cervicitis, prolapsus uteri, cystocele, and rectocele. A biopsy made at the time of the first visit was reported as showing chronic cervicitis. A diagnosis of squamous cell carcinoma of the cervix, type V, was made from vaginal smears obtained at the first visit. A second biopsy, made on June 3, was again reported as indicating chronic cervicitis. On July 28, vaginal hysterectomy, bilateral salpingo-oophorectomy, anterior and posterior colporrhaphy, and perineorrhaphy were done. On this date, vaginal smears were diagnosed as type

V. After numerous serial sections had been made, the pathologic examination revealed early squamous cell carcinoma of the cervix.

Case 2

A 55-year-old colored widow, who had had two pregnancies with one abortion, was seen first in the medical clinic on February 5, 1947, complaining of headaches and dizziness. She had had an uneventful menopause two years previously. On routine pelvic examination, erosion of the cervix was noted. The preliminary diagnosis was essential hypertension and chronic cervicitis. The report on a biopsy was chronic cervicitis. Papanicolaou smears were diagnosed as squamous cell carcinoma of the cervix, type IV, at this time. The patient was followed with monthly biopsies and vaginal smears until July 27, before the smear diagnosis made on February 5 was confirmed by pathologic examination.

Case 3

A white, married woman, aged 37, the mother of six children, was seen first in our clinic on April 1, 1947, with a referral diagnosis of squamous-cell carcinoma of the cervix. Her last pregnancy had terminated in the spontaneous delivery of a full-term infant three months previously. The last two months of gestation were complicated by preeclampsia and intermittent vaginal spotting. There was daily spotting after delivery. Ten days prior to her first visit here, a diagnostic curettage and cervical biopsy had been made. The pathologic report was squamous cell carcinoma of the cervix. A biopsy made on her first visit here was reported as showing chronic cervicitis without evidence of malignancy. Papanicolaou smears obtained on April 1 and April 7, however, were classified as squamous-cell carcinoma of the cervix, type V. A biopsy made on April 8, 1947, confirmed the original report on the biopsy made elsewhere. The final pathologic examination of the cervix and uterus, following radical hysterectomy and pelvic lymphadenectomy, showed cervical carcinoma *in situ*.

Case 4

A 55-year-old white woman who was separated from her husband was seen first in our clinic on September 15, 1947. She was referred by her local physician with a diagnosis of a questionable carcinoma of the cervix. She had six living children and had had one abortion. Her menopause eight years previously had been uneventful. For the past year there had been daily vaginal spotting associated with leukorrhea. The preliminary diagnosis was carcinoma of the cervix, stage I-II. The report on a biopsy made on September 15 was chronic cervicitis with atypical findings in the epithelium. Papanicolaou smears obtained at this time were classified as squamous-cell carcinoma of the cervix, type V. A second biopsy made on September 23 was reported as showing epidermoid carcinoma of the cervix, spinal-cell type.

Discussion

These 4 cases illustrate clearly the possibility of detecting early malignancy by the smear method. Preinvasive cervical carcinoma, although it sheds cells into the vagina, may present no visual evidence of a lesion. Thus it is easily possible for the operator to bite in the wrong place with the biopsy forceps.

Results Obtained at Duke

So far in this study, approximately 4750 smears from 1139 patients have been examined. Cancers were diagnosed by pathologic examination in 106 of these patients. Ninety-seven of these 106 malignancies were diagnosed by vaginal smears—an error of 9.1 per cent. Three of the nine failures to make the diagnosis were due to insufficient tissue or poor fixation, three to the fact that the smears were obtained after roentgen therapy, and three to failure to recognize cancer cells which were present in the smears.

False positive diagnoses were made in 28 of the remaining 1,033 patients—an error of 2.7 per cent.

Discussion

Relatively speaking, routine vaginal smears have been used by us for a comparatively short time. It must be realized that our technique and results are steadily improving in direct ratio to our experience. The vaginal-smear method has been proved to be an excellent procedure and one which should be added to our laboratory armamentarium. At the present time we feel that pathologic confirmation of smear diagnoses should be obtained in every case prior to institution of treatment.

The procedure is simple, though not inexpensive when one takes into account the necessary chemicals and the technical help needed. Only a short time is required to obtain and stain the smears, but careful and sometimes lengthy scrutiny is necessary for interpretation. The interpretation can be completed within thirty or forty minutes after the smears are taken, however—as compared to the one to four days required for biopsy.

The important feature of this procedure is its potentialities as a screening method for the detection of early cancer and of the precancerous but benign lesion. We believe that in the future this service will be available to every North Carolina doctor, as serology examinations are at the present time. The availability of such a service should encourage doctors to make frequent pelvic examinations, with the result that many more early lesions will be detected. Only then will we be able to decrease the death rate from genital cancer in women.

Summary

The technique introduced by Papanicolaou and Traut for obtaining, staining and interpreting vaginal smears in the diagnosis of cancer has been discussed.

Four cases have been cited which illustrate the fact that the diagnosis of preinvasive cervical carcinoma can be made much earlier by the vaginal smear method than by biopsy.

Approximately 4750 smears from 1139 patients have been studied at Duke. Ninety-seven cases of genital malignancy were diagnosed by smears out of a group of 106 diagnosed by pathologic examination of tissue—an error of 9.1 per cent. False-positive diagnoses were made in 28 of 1,033 patients—a percentage of 2.7.

Salient advantages of the vaginal-smear method in the diagnosis of genital cancer have been described. It is thought that this procedure will come to be a routine part of the complete physical examination of women.

The counterstains used in this study have been made available through the courtesy of Dr. C. E. Folsome of the Ortho Pharmaceutical Corporation, Linden, New Jersey.

We know the main facts about cancer. We know it is the chief cause of death in men and women in the years after 40—the time when they have established a place in life, a home, a reputation, when they are most useful to their profession and their country and most necessary to their families. We know that at first it is not a tumour but an insensible transformation of the cells in some part of the body to a structure that is a caricature of the normal rather than something new or different; that this new tissue has no nerve supply, and that it produces no inflammatory reaction in the normal parts surrounding it—in other words, that it is entirely painless, and in most cases entirely symptomless. We know that, for purposes of recording, cancers can be sorted into three stages, based on their gross naked-eye pathology: Stage I, in which there is a local growth only; Stage II, in which as well as the local growth there are early metastases in the nearest lymphatic glands or in tissues immediately adjacent; and Stage III, in which the primary growth or the metastases are fixed, or more distant organs are involved. We know also that in those parts of the body which can be effectively irradiated, or where a radical operation that satisfies pathological criteria can be performed—the breast, the colon, the rectum, and most parts of the skin—the five-year cures in Stage I are 80 to 90%, in Stage II about 50%, and in Stage III not more than 10%.—Ogilvie, H.: *The Early Diagnosis of Cancer of the Oesophagus and Stomach*, British M. J. 2:405 (Sept. 13) 1947.

THE CELLULAR CHANGES IN CARCINOMA OF THE PROSTATE FOLLOWING HORMONAL THERAPY

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ASHEVILLE

In 1893, White reported a series of 100 cases of prostatism treated by castration⁽¹⁾. No differentiation between benign hyperplasia and carcinoma was made. The improvement in urinary obstruction was encouraging in some cases, but the procedure was discarded and nothing more was written about it for years.

One of the first steps toward the modern concept of prostatic carcinoma came in 1935: Kutscher and Wolbergs found that adult prostatic tissue and secretion are very rich in the enzyme, acid phosphatase⁽²⁾, whereas the infantile gland contains only minimal amounts. The following year Gutman, Sproul, and Gutman confirmed this work and found that metastases from prostatic carcinoma are also rich in this enzyme⁽³⁾. It was thus logical to assume that the cell of prostatic carcinoma is, at least some of the time, well enough differentiated to retain its ability to elaborate acid phosphatase.

In 1941, Huggins and Hodges presented their thesis which has since revolutionized the treatment of prostatic cancer⁽⁴⁾. Because of its simplicity and brevity this thesis is quoted:

"In many instances a malignant prostatic tumor is an overgrowth of adult epithelial cells. All known types of adult prostatic epithelium undergo atrophy when androgenic hormones are greatly reduced in amount or inactivated. In this paper evidence is presented that significant improvement often occurs in the clinical condition of patients with far advanced cancer of the prostate after they have been subjected to castration. Conversely the symptoms are aggravated when androgens are injected. We believe that this work provides a new concept of prostatic carcinoma."

In the six years since this paper appeared there have been many reports in the litera-

ture evaluating the *clinical* course of patients after the cell of prostatic cancer has been deprived of male sex hormone. In many cases castration or estrogen therapy has proven to be very beneficial. It results in prolongation of life and relief from pain. It is agreed, however, that this method of therapy is not curative. After a varying period of quiescence the cancer again asserts itself, causing, ultimately, a fatal outcome.

The histologic appearance of the cell of prostatic carcinoma after it has been deprived of male sex hormone has received very little attention, and few studies have been done on the acid phosphatase content of carcinomatous tissue following hormonal therapy. Although such studies involve only one phase of the disease, they may at least contribute to the ultimate realization of our fundamental objective—namely, to increase our knowledge of the metabolism and behavior of the cell of prostatic carcinoma, in order that further strides can be made in the treatment and control of this disease.

The Normal Prostate

The prostate, prior to puberty, is a small infantile gland at rest. The cells lining the acini are also small and inactive, producing no secretion. Chemical analysis of this pre-pubescent gland reveals only minimal amounts of acid phosphatase. The cells lining the adult prostatic acini, on the other hand, contain and secrete a solution rich in acid phosphatase. This solution serves as a liquid vehicle for the spermatozoa which are discharged from the ejaculatory ducts. The ability of the prostatic cells to elaborate this secretion is certainly due in large measure to the male sex hormone, since the eunuchoid prostate never achieves this ability.

Since he originally demonstrated the dependency of the adult prostatic epithelial cell on androgens, Huggins, with his coworkers, has continued to study the cell's metabolism. They have shown that, in addition to the large amount of acid phosphatase present in the normal adult prostate, it also has a high content of citric acid⁽⁵⁾.

The Malignant Prostatic Cell

The malignant prostatic epithelial cell usually retains at least two characteristics

Read at the annual symposium of the Duke Medical Alumni Association, Durham, North Carolina, April 25, 1947.

1. White, J. W.: The Present Position of the Surgery of the Hypertrophied Prostate. *Ann. Surg.* 18:152-188, 1893.
2. Kutscher, W., and Wolbergs, H.: Prostatophosphatase. *Ztschr. f. physiol. Chem.* 236:237-240, 1935.
3. Gutman, E. B., Sproul, E. E., and Gutman, A. B.: Significance of Increased Phosphatase Activity of Bone at the Site of Osteoplastic Metastases Secondary to Carcinoma of the Prostate Gland. *Am. J. Cancer* 28:485-495 (Nov.) 1936.
4. Huggins, C., and Hodges, C. V.: Studies on Prostatic Cancer; I. The Effect of Castration, of Estrogen and of Androgen Injection on Serum Phosphatases in Metastatic Carcinoma of the Prostate. *Cancer Research* 1:293-297 (April) 1941.

5. Barron, E. S. G. and Huggins, C.: Metabolism of Prostate: Transamination and Citric Acid. *J. Urol.* 55:385-390 (April) 1946.

of its normal forebear: (1) the ability to elaborate acid phosphatase, as shown by chemical analysis; and (2) partial dependence on the male sex hormone for its metabolism. When deprived of male sex hormone, the malignant cell undergoes a temporary regression, evidenced by both clinical and histologic changes.

The study of the histologic and metabolic effects of hormonal therapy on the malignant prostatic cell may be divided into three phases: (1) before treatment, (2) after withdrawal or neutralization of the male sex hormone, and (3) after the reappearance of the cell's malignant qualities, when it has recovered from the temporary ill health occasioned by the withdrawal of the androgenic hormone. The line of demarcation between these phases is, of course, not clear cut.

Phase 1: Before treatment

The untreated prostatic carcinoma exhibits the same histologic appearance and behavior seen in other malignancies: the cells appear in all gradients between the well-differentiated acinus reproducing pattern and the undifferentiated amorphous mass of malignant cells. The tumor cells usually have large vesicular nuclei, prominent nucleoli, and granular, reticulated cytoplasm.

The classical modes of spread are by the perineural lymphatics and blood vessels. Metastases locate most regularly in the bones of the spine and pelvis.

Huggins and his coworkers have shown that the respiratory quotient of isolated human prostatic adenoma is relatively low, while both aerobic and anaerobic glycolysis is high⁽⁶⁾. They have also shown that when dogs are deprived of male sex hormone the oxidative phase of carbohydrate metabolism is diminished⁽⁶⁾. These observations are mentioned merely because they represent a step in the progress toward the fundamental objective stated above.

Phase 2: After withdrawal or neutralization of the male sex hormone

All the papers on the clinical aspects of this subject note that during this phase the prostate frequently diminishes in size and undergoes a decrease in induration, so that it feels practically normal. In many cases, however, the change in size and consistency

of the prostate is negligible. Metastases in the bones and lungs have been seen to regress—in some instances, to a point where they are no longer detectable by x-ray. In metastatic bone lesions, x-ray changes which are interpreted as signifying healing are seen⁽⁷⁾. At the same time the serum acid phosphatase, when it has been elevated, is seen to drop significantly.

The first histologic study of prostatic tissue in this phase was mentioned by Huggins, who had biopsies made from a superficial lymph node metastasis before and after castration⁽⁸⁾. The original growth was a typical adenocarcinoma. The biopsy, one hundred and seven days after castration, showed diminution in the size of the acini, increase in connective tissue stroma, and areas of pyknotic and fused nuclei. No mention was made of cytoplasmic alterations.

The next such study appeared in 1942, and has remained as the only concentrated attempt to investigate the cellular pattern following hormonal therapy. It was carried out by Schenken, Burns, and Kahle, of New Orleans⁽⁹⁾. In 7 cases of carcinoma of the prostate they made one or more prostatic biopsies at varying intervals while the patients were receiving estrogens. After comparing these biopsies histologically with original biopsies, these workers described as follows what they conceived to be the series of changes resulting from diethylstilbestrol therapy: Vacuoles appear in the cytoplasm, and at the same time the nuclei tend to assume a basilar position. With the increase in the size of these vacuoles the cell membranes finally rupture, leaving the nuclei lying in clusters with no cell boundaries. While these cytoplasmic variations are taking place, the nuclei become progressively more pyknotic and smaller.

A critical perusal of the work of these authors gives rise to some skepticism regarding their conclusions—without, however, detracting from the definite value of their contribution. One reason for this skepticism is the small number of cases studied; another is the fact that the changes they describe are quite frequently seen in untreated prostatic

7. Alvea, E. P., and Henderson, A. F.: Castration for Carcinoma of the Prostate, *J. Urol.* 48:673-681 (Dec.) 1942.

8. Huggins, C.: Effect of Orchiectomy and Irradiation on Cancer of the Prostate, *Ann. Surg.* 115:1192-1200 (June) 1942.

9. Schenken, J. R., Burns, E. L., and Kahle, P. J.: The Effect of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland; II. Cytologic Changes Following Treatment, *J. Urol.* 48:99-112 (July) 1942.

6. Barron, E. S. G., and Huggins, C.: The Metabolism of Isolated Prostatic Tissue, *J. Urol.* 51:630-634 (June) 1944.

carcinoma and, conversely, that many prostatic malignancies treated with stilbestrol fail to show these alterations.

Since the appearance of this work only six papers have been published dealing entirely or partially with the cellular changes of prostatic carcinoma following hormonal therapy⁽¹⁰⁾. One of these papers is by the same authors and is a follow-up of the same cases originally reported. Another describes changes similar to those reported by Schenken, Burns, and Kahle, but does not state how many cases were studied. There remain only four reports of cases studied in this fashion in the five-year period. The authors reporting these 4 cases agree, fundamentally, with Schenken, Burns, and Kahle. One point lacking unanimity, however, concerns changes in the cytoplasm. Some are indefinite in describing the cytoplasm; none state that vacuoles were seen. Two authors mention that the bulk of the growth has been apparently replaced by scar tissue, leaving only scattered pyknotic nuclei. All authors agree that there is diminution in the size and progressive pyknosis of the nuclei.

My interest in the histologic changes in the cell of prostatic carcinoma after hormonal therapy was aroused by a patient on the urologic service at Duke Hospital. This patient ultimately died and the autopsy findings were reported by Margolis and myself^(10b). In our discussion of the cellular changes, we mentioned 2 additional cases, one of which showed, in tissue containing obviously active growing tumor in spite of large doses of stilbestrol, the supposed regressive changes described by Schenken, Burns, and Kahle. The other showed these changes in tissue from an untreated prostatic carcinoma. In their original paper Schenken and his coworkers found the "regressive" changes in 25 of 44 untreated cases; and Ewing in his book on NEOPLASTIC DISEASES

describes this cytoplasmic appearance in untreated prostatic carcinoma⁽¹¹⁾.

It is obvious that with the present information at hand it is injudicious to draw any specific conclusions regarding the cell changes in prostatic malignancy following inactivation or withdrawal of the male sex hormones. Changes obviously do take place, and there seems to be agreement as to the development of pyknotic nuclei. With a total of only 11 patients studied histologically in this phase, however—when thousands by now have been treated in like fashion—no generalizations are warranted.

Doubtless many clinicians are inclined to think that it makes little difference whether the cell of prostatic carcinoma, when deprived of the male sex hormone, has a vacuolated cytoplasm, a pyknotic nucleus, or a ruptured cell membrane. If we are ever going to attain control of prostatic carcinoma, however, everything that can be learned about this cell and its behavior in different situations should be studied.

Phase 3: After resumption of the cell's malignant qualities

The cell in this stage has the same appearance and morphology that it possessed in the original untreated state. This fact was very clearly and easily demonstrated in the case which we reported^(10b). Sections of actively growing tumor taken at autopsy were indistinguishable from the pre-treatment biopsy. It is true, however, that in such sections were found areas of fibrosis with embedded pyknotic nuclei, presumably representing tumor which had regressed when the male sex hormone was withdrawn. The significant point is that, even though the malignant cell in this stage is growing without male sex hormone, its appearance is unaltered.

As is so often the case, however, appearance alone does not necessarily give the key to behavior. For some unknown reason the cell now does not seem to like its original environment as well as its adopted homes—the metastatic areas. It has been observed many times clinically that the prostate maintains its decrease in size and induration, while metastases grow apace. This chain of events is not invariable, but it occurs frequently enough to form a pretty large group, if not a majority of the cases.

10. (a) Heckel, N. J., and Kretschmer, H. L.: Carcinoma of the Prostate Treated with Diethylstilbestrol: Histologic Alterations, J.A.M.A. 119:1087 (Aug. 1) 1942; (b) Gilbert, G. G., and Margolis, G.: Post-Mortem Findings in Carcinoma of the Prostate Following Castration and Diethylstilbestrol Therapy, J. Urol. 50:82-94 (July) 1943; (c) Kahle, P. J., Schenken, J. R., and Burns, E. L.: Clinical and Pathologic Effects of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland: a Continuing Study, J. Urol. 50:711-732 (Dec.) 1943; (d) Graves, R. C., and Cross, J.: Regression of Lymph Node Metastases after Orchidectomy and Stilbestrol in Carcinoma of the Prostate: Report of a Case, J. Urol. 51:59-63 (Jan.) 1944; (e) Moore, G. F., Wattenberg, C. A., and Rose, D. K.: Breast Changes Due to Diethylstilbestrol during Treatment of Cancer of the Prostate Gland, J.A.M.A. 127:60-62 (Jan. 13) 1945; (f) Wattenberg, C. A.: Liver Changes and Other Effects of Diethylstilbestrol during Treatment of the Prostate Gland Cancer, J. Urol. 55: 631-10 (June) 1946.

11. Ewing, J.: Neoplastic Diseases, ed. 4, Philadelphia, W. B. Saunders Co., 1910, p. 851.

There is still another apparent difference in the revived cell's activity: it does not contain as much acid phosphatase as it did before treatment. In the case mentioned above^(10b) we found at autopsy 8 K.A. (King and Armstrong⁽¹²⁾) units of acid phosphatase per gram of wet tissue, as compared to a normal of 500 to 1500. This finding of a low acid phosphatase value in the prostate deprived of male sex hormone has recently been confirmed in 4 cases by Woodard and Dean⁽¹³⁾.

It may be concluded, therefore, that the cell of prostatic carcinoma, upon resuming its activity following regression caused by lack of androgens, assumes its original histologic appearance, but behaves differently by preferring metastatic areas for its growth, by growing with little or no male sex hormone, and by containing less acid phosphatase.

There is one related point of interest which applies in general to all three phases described: When Huggins first published his work he felt that tumors which were well differentiated histologically responded better to withdrawal of male sex hormone than did the anaplastic, undifferentiated growths⁽⁸⁾. This phase of the histology of prostatic carcinoma has been studied in detail. It has been shown that this conclusion is not warranted and that no correlation exists between cell type and prognosis⁽¹⁴⁾. This finding serves as another illustration that a tumor's appearance does not necessarily predict or reflect its behavior.

Summary and Conclusion

The background of the endocrine treatment for prostatic carcinoma has been reviewed. The life history of the malignant prostatic cell has been described—first in its unhampered state, then while it is temporarily incapacitated by being deprived of male sex hormone, and finally as it develops again into a killer in spite of its feminized environment. It is the purpose of this discussion to show that there are many avenues for further investigation of carcinoma of the

prostate as a whole, and that much more study is needed on the cellular changes following hormonal therapy. Opportunities to increase our knowledge are many.

GRANULOMA INGUINALE TREATED WITH STREPTOMYCIN

Report of a Case

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and

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While the effectiveness of various antimony compounds in the therapy of granuloma inguinale has been established, adequate treatment with these drugs is difficult because of the long periods of time required and the toxic reactions which sometimes develop. The disease occurs most frequently in the type of individual who seldom follows a program of therapy regularly or for a sufficiently long period of time to effect a cure. There has been a continual search for a more rapid and adequate means of treatment for this disease analogous to the rapid treatment of syphilis. It is known that regular treatment with the arsenicals and bismuth will yield a large percentage of cures in syphilis, but only 15 to 20 per cent of the patients who begin this type of therapy ever complete the required course. Rapid treatment methods, especially those employing penicillin, have increased the percentage of patients who complete therapy to almost 100 per cent. Recently, Greenblatt with his co-workers⁽¹⁾ and Barton with his coworkers⁽²⁾ have demonstrated that streptomycin is effective in the treatment of granuloma inguinale. Perhaps this is the "rapid treatment" which is needed so urgently in the therapy of this disease.

A case of extensive granuloma inguinale successfully treated with streptomycin is reported below.

From the Division of Dermatology and Syphilology, Department of Medicine, Duke University School of Medicine, Durham, North Carolina.

12. King, E. J. and Armstrong, A. R.: A Convenient Method for Determining Serum and Bile Phosphatase Activity, *Canad. M. A. J.* 31:376-381 (Oct.) 1934.
13. Woodard, H. Q., and Dean, A. L.: The Significance of Phosphatase Findings in Carcinoma of the Prostate, *J. Urol.* 57:158-171 (Jan.) 1947.
14. (a) Nesbit, R. M., and Cummings, R. H.: Prostatic Carcinoma Treated by Orchiectomy, *J.A.M.A.* 120:1109-1111 (Dec. 5) 1942; (b) Herger, C. C., and Sauer, H. R.: The Effect of Orchiectomy and Stilbestrol in Carcinoma of the Prostate, *Am. J. Surg.* 62:185-200 (Nov.) 1943.

1. (a) Greenblatt, R. B., Kupperman, H. S., and Dienst, R. B.: Streptomycin in the Therapy of Granuloma Inguinale, *Proc. Soc. Exper. Biol. & Med.* 64:389 (April) 1947; (b) Greenblatt, R. B., Dienst, R. B., et al.: Granuloma Inguinale: Streptomycin Therapy and Research, *J. Ven. Dis. Inform.* 28:183-188 (Sept.) 1947.
2. Barton, R. L., Craig, R. M., Schwemlein, G. X., and Bauer, T. J.: Granuloma Inguinale Treated with Streptomycin, *Arch. Dermat. & Syph.* 56:1-6 (July) 1947.



Fig. 1. Photograph taken in 1945.

Case Report

A 38-year-old single colored man was first seen in the outpatient clinic of Duke Hospital on April 3, 1945. He stated that in May, 1942, when he reported for induction into the Army, he was found to have a positive serologic test for syphilis. At that time he received twenty-four weekly intravenous injections and was told that his serologic test for syphilis had become negative. Late in 1943 he developed a "sore" on the glans penis which was treated by circum-

cision. The operative wound healed incompletely. Exuberant red granulation tissue developed in the wound and spread peripherally. In June, 1944, the inguinal lymph nodes became enlarged bilaterally. These broke down in one month, and the velvety granulations typical of granuloma inguinale appeared. One x-ray treatment was given to the inguinal lesions. Some tablets (presumably sulfonamides) and three intravenous injections (presumably tartar emetic) were also given. This treatment did not produce improvement. The penis remained enlarged to about twice its normal size and was indurated and tender. The large areas of sharply demarcated, piled-up granulation tissue remained unchanged (fig. 1). The patient was, at that time, referred to the Duke Hospital outpatient clinic.

The serologic test for syphilis was negative. Frei and Ducrey tests were also negative, but scrapings from the inguinal lesions showed Donovan bodies. A diagnosis of granuloma inguinale was made, and he was referred to the Rapid Treatment Center in South Carolina, his home state, for treatment. He did not report there, however, but received an antimony preparation intravenously at irregular intervals from a private physician. He returned to Duke Hospital on June 16, 1947. At this time there was marked extension of the lesions (fig. 2), and he was completely incapacitated. He was, therefore, admitted to the hospital for streptomycin therapy.



Fig. 2. Photograph taken immediately before streptomycin therapy was begun.

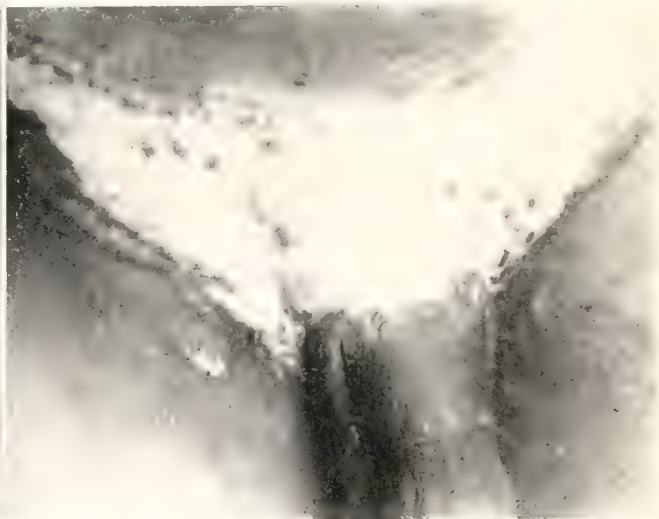


Fig. 3. Photograph taken two months after completion of streptomycin therapy.

Physical examination showed the glans penis to be swollen many times its normal size, markedly tender, and indurated. Completely covering both inguinal regions and extending over the abdomen for about three inches was a large, red, weeping, tender, bleeding, butterfly-shaped granulomatous area. The remainder of the physical examination was essentially negative.

The hemoglobin was 30 per cent and there were 2,500,000 red blood cells. Scrapings from the lesions revealed numerous Donovan bodies. Serologic tests for syphilis were negative. The urinalysis was normal.

Streptomycin therapy in doses of 0.6 Gm. intramuscularly every four hours was started immediately upon admission. A total dosage of 32.4 Gm. was given. Continuous compresses of potassium permanganate in a dilution of 1:4000 were applied to the lesions. The patient received no other treatment.

On the third day of streptomycin therapy repeated smears for Donovan bodies showed a marked diminution in their number. After the fifth day, no Donovan bodies could be demonstrated in scrapings from the lesions. When he was discharged on July 3, 1947, the lesions were less tender and acute. Beginning epithelization was visible at the borders of the lesions.

On August 2, 1947, he returned to the outpatient clinic remarkably improved. There was 75 per cent epithelization of the lesions, and the patient was comfortable enough to resume work. On September 22 he returned for further observation. At this time the lesions were completely healed except for one small crusted patch on the pubis (fig. 3). On October 22 complete healing had taken place, leaving a large area of depigmented scar-tissue.

Summary and Conclusions

A case of granuloma inguinale of four years' duration treated with streptomycin is reported. The results achieved with this therapy are apparently excellent. It is hoped that the treatment of additional cases by this method, with adequate follow-up examinations, will prove that the initial good results are permanent.

At the present time streptomycin seems to be the best single drug available for the treatment of granuloma inguinale.

FLUORINE AND THE PREVENTION OF DENTAL CARIES

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Exceeding even the common cold in universality, dental caries is the most widespread affliction affecting mankind. With few exceptions, dental caries knows no age, sex, social or economic position, geographic location, or season; instead, it occurs constantly and continues the year around. When untreated, it results in the loss of large parts of the masticatory apparatus and may produce sequelae in many parts of the body. It is not surprising, then, that the experimental use of fluorides to prevent the occurrence of dental caries grips the eager interest of all who are concerned with this baffling public health problem.

The American Geographic Society has chosen fluorine as the first of its studies for the projected "Atlas of Diseases." Van Burkalow⁽¹⁾ reports that a study of fluorine in the water supply was chosen as the pilot project because of the direct relationship between dental health and an element of the physical environment. The primary purpose of the "Atlas of Diseases" is to show the correlation of disease with the natural and social environment.

The Relationship of Fluorine to Mottling of the Enamel

The discovery of the relationship between the fluoride content of the water supply and the incidence of dental caries stems from investigations which set forth to discover the cause of "mottling of the enamel."⁽²⁾ These investigations, launched by the newly organized Dental Society of Colorado Springs in 1908, disclosed the fact that the disfigurement of the teeth was due to something in

* Read before the Section on Public Health and Education, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 13, 1947.

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2. (a) Dean, H. T.: Endemic Fluorosis and Its Relation to Dental Caries, Pub. Health Rep. 53:1443-1452 (Aug. 19) 1938; (b) Dean, H. T., et al.: Domestic Water and Dental Caries, Including Certain Epidemiological Aspects of Oral L. Acidophilus, Pub. Health Rep. 54:862-888 (May 26) 1939; (c) Dean, H. T., Jay, P., Arnold, F. A., Jr., and Elvove, E.: Domestic Water and Dental Caries: II. A Study of 2,832 White Children, Aged 12-14 Years, of 8 Suburban Chicago Communities, Including Lactobacillus Acidophilus Studies of 1,761 Children, Pub. Health Rep. 56:761-792 (April 11) 1941.

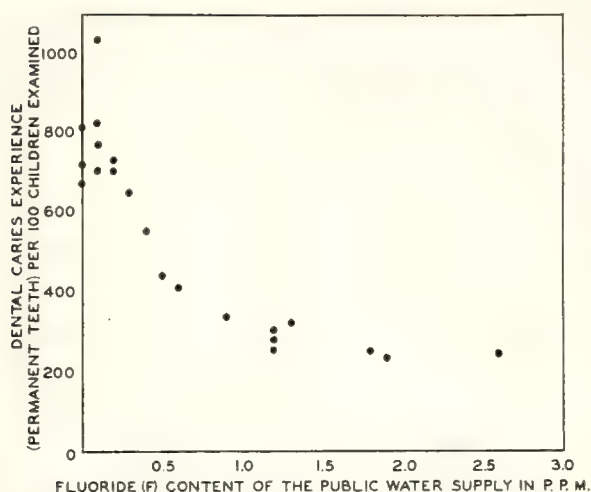


Fig. 1. Relation between the amount of dental caries (permanent teeth) observed in 7,257 selected 12- to 14-year-old white school children in twenty-one cities of four states, and the fluoride content of the public water supply. (Dean, Arnold, and Elvove^(9a))

the domestic water supply and that it occurred only in natives of the area or in people who had become residents during infancy or early childhood⁽³⁾.

In 1931, after two communities—Oakley, Idaho⁽⁴⁾ and Bauxite, Arkansas⁽⁵⁾—had changed their sources of water supply, Churchill⁽⁶⁾ and others⁽⁷⁾ simultaneously indicated that fluorine was the factor involved in mottling of the enamel. The water supply at Oakley was found to contain 8 parts of fluoride per million of water; that at Bauxite, 14 parts per million. Changing the water supply of these two towns prevented the occurrence of dental fluorosis (mottling of the enamel) in children born subsequent to the change^(3,8).

The Effect of Fluorine on Dental Caries

After the relationship between excessive

NUMBER OF CITIES STUDIED	NUMBER OF CHILDREN EXAMINED	NUMBER OF PERMANENT TEETH SHOWING DENTAL CARIES EXPERIENCE* PER 100 CHILDREN EXAMINED								FLUORIDE (F) CONCENTRATION OF PUBLIC WATER SUPPLY IN P.P.M.
		0	100	200	300	400	500	600	700	
11	3867	[Bar chart showing dental caries experience for 11 cities]								< 0.5
3	1140	[Bar chart showing dental caries experience for 3 cities]								0.5 TO 0.9
4	1403	[Bar chart showing dental caries experience for 4 cities]								1.0 TO 1.4
3	847	[Bar chart showing dental caries experience for 3 cities]								> 1.4

* DENTAL CARIES EXPERIENCE IS COMPUTED BY TOTALING THE NUMBER OF FILLED TEETH (PAST DENTAL CARIES), THE NUMBER OF TEETH WITH UNTREATED DENTAL CARIES, THE NUMBER OF TEETH INDICATED FOR EXTRACTION, AND THE NUMBER OF TEETH MISSING (PRESUMABLY BECAUSE OF DENTAL CARIES).

Fig. 2. Amount of dental caries (permanent teeth) observed in 7,257 selected 12- to 14-year-old white school children in twenty-one cities of four states, classified according to the fluoride concentration of the public water supply. (Dean, Arnold, and Elvove^(9a))

quantities of fluoride in the drinking water and mottling of the enamel had been established, Dean and his associates^(2,9) showed that amounts of fluoride not exceeding 1 part per million did not produce dental fluorosis, and that an *inverse* relationship was present between the amount of fluoride in the domestic water supply and the occurrence of dental caries. They noted that "at concentrations of 0.9 to 0.5 part per million, the influence is less marked than at the higher concentrations; nevertheless, the dental caries experience rates are distinctly lower than those associated with the use of relatively fluoride-free waters."^(9a) They concluded that: "Strikingly low dental caries prevalence was found associated with the continuous use of domestic waters whose fluoride (F) content was as low as about 1 part per million, a concentration which under the conditions prevailing in the localities studied produced only sporadic instances of the mildest forms of dental fluorosis of no practical esthetic significance."^(9a)

Figures 1 and 2 show the relation between the fluoride content of the public water supply and the amount of dental caries of the permanent teeth observed in 7,257 12 to 14-year-old white school children of twenty-one

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- (a) Smith, Margaret C., Lantz, E. M., and Smith, H. V.: Cause of Mottled Enamel, Defect of Human Teeth, University of Arizona College of Agric., *Agric. Exper. Station Tech. Bull.*, No. 32 (June 10) 1931; (b) Velu, H., and Balozet, L.: Darmous (Dystrophie dentaire) du Mouton et Solubilité du Principe actif des Phosphates naturels qui le provoque, *Bull. Soc. path. exot.* 24:848 (Nov. 12) 1931.
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- (a) Dean, H. T. and Elvove, E.: Studies on the Minimal Threshold of the Dental Sign of Chronic Endemic Fluorosis (Mottled Enamel), *Pub. Health Rep.* 50:1719-1729 (Dec. 6) 1935; (b) Dean, H. T., and Elvove, E.: Further Studies on the Minimal Threshold of Chronic Endemic Dental Fluorosis, *Pub. Health Rep.* 52:1249-1264 (Sept. 10) 1937; (c) Dean, H. T., Jay, P., Arnold, F. A., Jr., and Elvove, E.: Domestic Water and Dental Caries; I. A Dental Caries Study, Including L. Acidophilus Estimations, of a Population Severely Affected by Mottled Enamel and Which for the Past 12 Years has used a Fluoride-Free Water, *Pub. Health Rep.* 56:365-381 (Feb. 28) 1941; (d) Dean, H. T., Arnold, F. A., Jr., and Elvove, E.: Domestic Water and Dental Caries; V. Additional Studies of the Relation of Fluoride Domestic Waters to Dental Caries Experience in 4,425 White Children, Aged 12 to 14 Years, of 13 Cities in 4 States, *Pub. Health Rep.* 57:1155-1179 (Aug. 7) 1942.

cities in four states. As Dean and his co-authors pointed out⁽⁹⁾, "the relative homogeneity of these populations, the method of selecting the study groups, and the similarity of diagnostic standards used" make it unlikely that the differences in the incidence of dental caries in the different cities could be due to any factor "other than the mineral composition of the public water supply."

Table 1

Comparison of Fluoride Content of Water Supply and Dental Findings Among Selected 12- to 14-Year-Old White School Children in Illinois Cities (Arnold⁽¹⁰⁾)

City	Fluoride Content of Water Supply	Percent. Children Examined, Caries-Free	Caries Rate per 100 Children Examined	First-Molar Mortality per 100 Children Examined
Maywood	1.2	29.8	258	11.7
Aurora	1.2	23.5	281	14.5
Evanston	0.0	3.9	673	42.6
Oak Park	0.0	4.3	722	31.0
Waukegan	0.0	3.1	810	79.9

Table 1⁽¹⁰⁾ shows a comparison between the incidence of dental caries among children living in Aurora and Maywood, Illinois—communities with a water supply of relatively high fluoride content—and children living in three Illinois towns using the fluoride-free waters from Lake Michigan (Evanston, Oak Park, and Waukegan, Illinois). As this table shows, the percentage of caries-free children was about six times as great in the first two towns as in the last three. The contrast is even more striking when we realize that Maywood and Oak Park are only three miles apart.

This comparison gives an indication of the dental benefits to be expected from bringing the fluoride content of the water supply up to 1 part per million. Dean⁽²⁾ points out that in Aurora, with a fluoride content of 1.2 parts per million, mottled enamel, although it was encountered in 15 per cent of the children examined, was not an esthetic problem. The incidence of dental fluorosis at Maywood was 33.3 per cent. Dean explains this discrepancy on the basis of evidence indicating that, until a few years before the examinations, Maywood water probably contained 1.4 to 1.6 parts of fluoride per million.

Figure 3 indicates the relative location of eight Illinois communities studied, and gives the fluoride content of the water supply (F) and the caries-attack rate per hundred children examined.

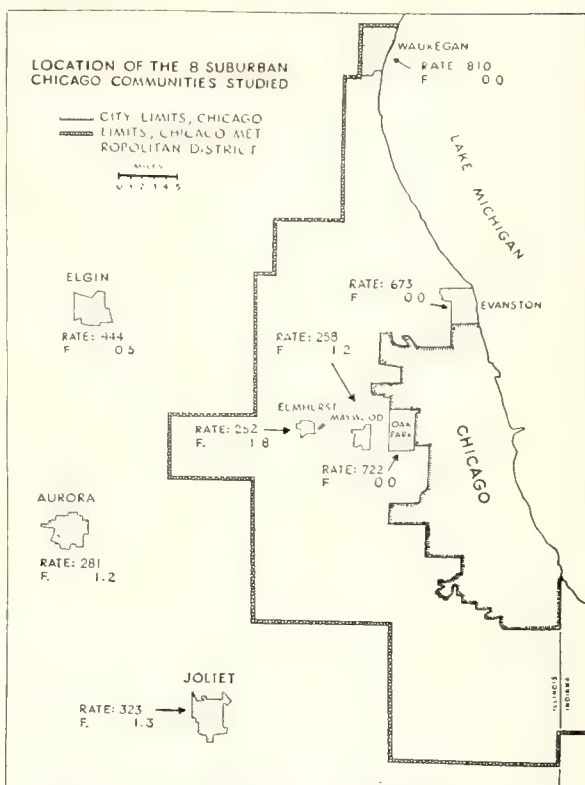


Fig. 3. (From Dean, H. T., in J. Am. Water Works Assoc. 38:1161-1186 (Sept.) 1943.)

The Artificial Addition of Fluorine to Water Supplies

In light of the above findings, it was only natural to conjecture on the possible results of adding fluorides to fluoride-deficient or fluoride-free water in sufficient amounts to bring the fluoride content up to 1 part per million. The United States Public Health Service⁽¹¹⁾ allows a maximum fluoride content of 1.5 parts per million in drinking water.

Possible harmful effects

Several million people in many different parts of the country have been using, for many years, water containing much higher amounts of fluoride than one part per million, without any apparent ill effects other than fluorosis of the teeth. The water supply of Colorado Springs contains approximately 2.5 parts of fluoride per million of water; that of Amarillo, Texas, 3.8 parts per million; and that of Lubbock, Texas, 5.1 parts per million. The question arises, however, as to whether there are any dangers involved in the artificial addition of fluorides to the

10. Arnold, F. A., Jr.: Role of Fluorides in Preventive Dentistry, J. Am. Dent. A. 30:499-508 (April) 1943.

11. Public Health Service Drinking Water Standards. Pub. Health Rep. 61:371-384 (March 15) 1946.

water supply.

Roholm⁽¹²⁾ has determined that the lethal dose of sodium fluoride is 4 Gm., the sublethal dose 230 mg. What would this mean in terms of the Charlotte water supply? At the present rate of consumption (about fifteen million gallons a day), around 308 pounds of 90 per cent pure sodium fluoride would be required daily to bring the fluorine content up to 1 part per million. By comparison, a lethal dose would require more than a quarter of a million pounds, while a sublethal dose would require more than 14,476 pounds, or 7 tons of sodium fluoride.

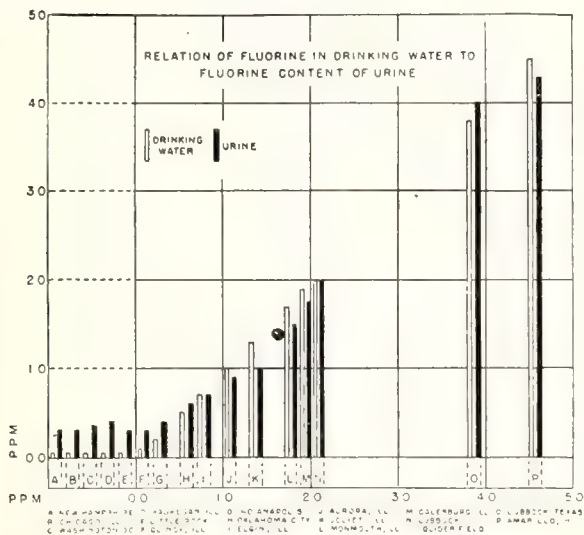


Fig. 4. (From McClure and Kinser⁽¹⁴⁾)

Machle⁽¹³⁾ determined that the normal urinary excretion of fluoride is approximately 1 mg. per liter, and that there is a correlation between the amount ingested and the amount excreted. McClure⁽¹⁴⁾, from his study of the amounts of fluorine present in the urine of inductees from many areas (fig. 4), concluded that urinary excretion of fluorine is proportional to the amount of fluorine in the water supply, up to 5 parts per million. He states further that "the uniformity in the urinary-fluorine figures for areas as widely separated as New Hampshire, Washington, D. C., Waukegan and Chicago and Quincy, Ill., Indianapolis, Ind. and Little Rock, Arkansas suggests that the content of fluorine in the average human diet, exclusive of

drinking water is remarkably uniform regardless of locality. It may be suggested that this is indicative also that fluorine in food produce is quite uniform, regardless of the conditions under which the food is produced."

Following the ingestion of food estimated to contain 0.3 to 0.6 mg. of fluorine, about 88 per cent of this amount appears in the urine and about 8 per cent in the feces⁽¹⁵⁾.

McClure⁽¹⁴⁾ points out that the close correlation between the fluoride content of drinking water and the urinary excretion of fluorine reduces the hazard of cumulative toxic bone fluorosis. In view of the low concentrations of fluorine in domestic waters, he states that "this form of fluorine toxicosis seems unlikely to become an endemic health problem." Evidence of fluorine toxicosis related to skeletal storage of fluorine has not been reported in association with the domestic use of fluoride-containing waters in the United States, even though, up to 1928, the water in Bauxite, Arkansas, contained 14 parts of fluoride per million of water.

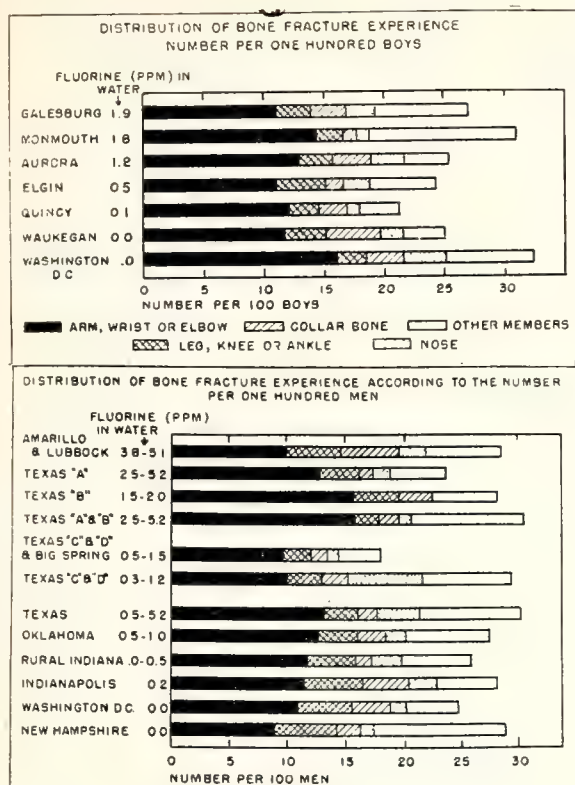
In order to obtain information regarding possible skeletal effects of dietary fluorine, McClure⁽¹⁶⁾ investigated the relation between fluorine ingested in domestic drinking waters and the height, weight, and bone-fracture experience of selected groups of high school boys and inductees. The data obtained, while not permitting final conclusions, suggested that there was no relation between the ingestion of fluoride in drinking water and fracture experience (fig. 5) or growth.

McClendon and Foster⁽¹⁷⁾ swallowed 1 Gm. of a fluorapatite toothpowder, containing nearly 4 per cent fluorine, daily for three years (in the case of Foster). At the end of this time no osseous change could be demonstrated roentgenographically. Each excreted 10 mg. of fluorine per day during this period.

While there is overpowering evidence that the addition of one part of fluoride per million in the domestic water supply can have no toxic effect, there is still the possibility that an unusual amount of sodium fluoride

12. Roholm, Kaj: Fluorine Intoxication: A Clinical Hygienic Study, London, H. K. Lewis, 1937.
13. Machle, W.: Normal Urinary Fluorine Excretion and the Problem of Mottled Enamel, Dent. Cos. 77:612-615 (June) 1936.
14. McClure, F. J., and Kinser, C. A.: Fluoride Domestic Waters and Systemic Effects; II. Fluorine Content of Urine in Relation to Fluorine in Drinking Water, Pub. Health Rep. 59:1575-1591 (Dec. 8) 1944.

15. Machle, W., Scott, E. W., and Largent, E. J.: The Absorption and Excretion of Fluorides; I. The Normal Fluoride Balance, J. Indust. Hyg. & Toxicol. 24:199-201 (Sept.) 1942.
16. McClure, F. J.: Fluoride Domestic Waters and Systemic Effects; I. Relation to Bone-Fracture Experience, Height, and Weight of High School Boys and Young Selectees of the Armed Forces of the United States, Pub. Health Rep. 59:1543-1558 (Dec. 1) 1944.
17. McClendon, J. F., and Foster, W. C.: The Non-Toxicity for Adults of Fluorine in Tooth Powder, J. Dent. Research 25:183 (June) 1946.

Fig. 5. (From McClure⁽¹⁶⁾)

powder might accidentally be dumped into the water supply. The likelihood of such an occurrence is remote, especially when we consider the efficiency of personnel and equipment, and the requirements for meticulous care in our modern metropolitan water plants. Water-works personnel are well experienced in the careful management of a variety of chemicals, including chlorine. Harris, chief chemist of the Water Department at Grand Rapids, Michigan (where the first and largest study on the addition of fluoride to a water supply is under way), stated that in the event of an accident involving around 500 pounds of sodium fluoride, the ultimate concentration of fluoride in the drinking water would probably not be more than 10 parts per million⁽¹⁸⁾.

Harris⁽¹⁸⁾ also stated that the addition of fluoride to water, even in amounts as great as 500 parts per million, gives no taste.

Possible beneficial effects

Studies all over the world^(9,19) make it evi-

dent that the greatest degree of protection against caries is conferred on those who, from birth through the eighth year of life, have been continuously exposed to domestic water supplies containing around 1 part of fluoride per million. This is the age-span during which the crowns of all the permanent teeth, with the exception of the third molar, are completely developed. Wisan⁽²⁰⁾, however, has shown that children moving into a community with a fluoride-containing water supply after their fourth birthday will benefit significantly by their subsequent exposure to the water (fig. 6).

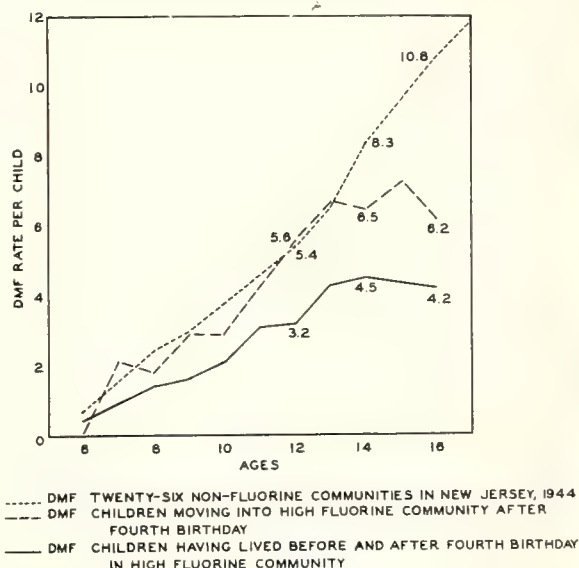


Fig. 6. Comparison of DMF rates in New Jersey communities (Wisan⁽²⁰⁾). The DMF rate is the total number of teeth decayed, missing (or indicated for extraction), or filled.

Children of older years (8-10) may also benefit by moving into such a community. Klein⁽²¹⁾ concluded from his observations on two groups of relocated Japanese children that "among young children (ages 8 to 10 years) transferred to an area where the drinking water contained 3 ppm of fluoride, the incidence of new caries experience in previously non-carious erupted teeth was reduced approximately 60 per cent below that which would be expected on the basis of the incidence observed in the control group . . . that among teeth present in the mouth at

18. Harris, W. L.: Experience in the Application of Fluoride to a Public Water Supply. Lectures, Univ. of Mich. School of Pub. Health, May 22-24, 1945.

19. (a) Lukomski, I.: Fluorine in Medicine (1940); abstracted by J. F. Volker in Am. Rev. Soviet Med. 2:543-546 (Aug.) 1945; (b) Ockerse, T.: Endemic Fluorosis in Pretoria District, South African M. J. 15:261-266 (July 26) 1941; (c) Weaver, R.: Fluorosis and Dental Caries on Tyneside, Brit. Dent. J. 76:29-40 (Jan. 21) 1944.

20. Wisan, J. M.: Dental Caries and Fluorine-Water, Pub. Health News, State Department of Health, Trenton, N. J. 27:139 (Oct.) 1944.

21. Klein, H.: Dental Caries Experience in Relocated Children Exposed to Water Containing Fluorine; I. Incidence of New Caries after 2 Years of Exposure among Previously Caries-Free Permanent Teeth. Pub. Health Rep. 60:1462-1467 (Dec. 7) 1945.

the beginning of exposure to fluorine, those most recently erupted were those most protected against caries attack." Weaver⁽²²⁾ arrived at similar conclusions from observations on 800 English children who had immigrated into an area where the drinking water contained 1.4 parts of fluoride per million of water. It remains to be seen whether a similar beneficial effect will be conferred on newly-erupted teeth by the artificial addition of sodium fluoride to the community water supplies.

Topical Application of Fluorine to the Teeth

It has been further demonstrated that fluorides topically applied to the teeth, particularly those that are newly erupted, result in a 21 to 50 per cent inhibition of new dental caries. Knutson⁽²³⁾, Dwyer⁽²⁴⁾, and Jordan⁽²⁵⁾ indicate that four to seven applications of 1 or 2 per cent solutions of sodium fluoride, preceded by dental prophylaxis, are likely to give the maximum reduction in new dental caries. Armstrong⁽²⁶⁾ determined that the mean fluorine content of the enamel of sound teeth is about 0.0111 per cent, while that of carious enamel is 0.0069—62 per cent less. He stated that fluorine, once it is deposited in the enamel, "does not quickly leave this structure, and it is doubtful if its amount is ever decreased."

Studying the effects of different kinds of fluorides on pure dried enamel and dentin, Bibby⁽²⁷⁾ found that acidulated lead fluoride reduced enamel solubility by 85 per cent, while acidulated sodium fluoride reduced enamel solubility by 55 per cent. Sodium acetate-acetic acid was used as a buffer. A mixture of sodium fluoride and hydrogen peroxide reduced enamel solubility by approximately 60 per cent. Clinically, Dwyer⁽²⁴⁾ has demonstrated a 50 per cent reduction in new decay on teeth treated with a 1 per cent solution of sodium fluoride. Bibby's own

clinical investigation⁽²⁸⁾ showed that the topical application of a 1:1000 solution of sodium fluoride resulted in a 46 per cent reduction in new caries. He postulates that "the freshly-erupted tooth surface (and, to a large degree, freshly-powdered tooth substance) offers an immature or chemically unreacted surface which under ordinary circumstances is a relatively soluble hydroxyl apatite and anything which reacts with it to form a less soluble apatite or phosphate complex will increase the resistance to dental caries."

Other studies on the prophylactic effect of fluorine in dental caries involve dentifrices, mouth washes, and tablets, all containing fluorides.

The Effects of Fluorine on Medical Conditions

Lukomski^(19a) has reported that the oral administration of five drops of a 1 per cent solution of sodium fluoride, three times daily for three to four weeks, gives satisfactory results in osteomyelitis.

Lewy⁽²⁹⁾, an otolaryngologist, was interested in the influence of fluorine on the prevention of some forms of deafness. He found that the incidence of hearing defects among 109,869 children in fluoride-free areas was 4.9 per cent, as compared with 2.8 per cent among 20,488 children in areas with a water supply containing more than 1.4 parts of fluoride per million. Some of the cities which are adding fluoride to their water supplies are including periodic physical examinations of the children in the community. It will be interesting to see if their findings confirm Lewy's observations.

Aisenberg⁽³⁰⁾ made a study of ten-year records for poliomyelitis and suggested that communities with water supplies containing 1 part or more of fluoride per million had 45 per cent less polio than fluoride-free communities. He states: "It will be interesting to observe if fewer cases of polio will appear in those communities that are now adding 1 ppm or less of fluoride to the water supply for the inhibition of dental caries."

22. Weaver, R.: Fluoride and Dental Caries: Further Investigations on Tyneside and in Sunderland. *Brit. Dent. J.* 77:185-193 (Oct. 6) 1944.
23. Knutson, J. W., Armstrong, W. D., and Feldman, F. M.: The Effect of Topically Applied Sodium Fluoride on Dental Caries Experience; IV. Report of Findings with Two, Four and Six Applications. *Pub. Health Rep.* 62:425-430 (Mar. 21) 1947.
24. Dwyer, H. Shirley, Dental Director, State Board of Health, New Hampshire: Personal communication, Nov. 16, 1946.
25. Jordan, W. A., Wood, O. B., Alliston, J. A., and Irwin, V. D.: The Effects of Various Numbers of Topical Applications of Sodium Fluoride. *J. Am. Dent. A.* 33:1385-91 (Nov. 1) 1946.
26. Armstrong, W. D.: Fluorine as It Relates to Caries. *Northwest Dent.* 21 (July) 1942.
27. Bibby, B. G.: Use of Fluorine in Prevention of Dental Caries. III. A Consideration of the Effectiveness of Various Fluoride Mixtures. *J. Am. Dent. A.* 34:26-32 (Jan. 1) 1947.

28. Bibby, B. G.: The Use of Fluorine in the Prevention of Dental Caries; II. Effect of Sodium Fluoride Application. *J. Am. Dent. A.* 31:317-321 (Mar. 1) 1944.
29. Lewy, A.: The Possible Value of Nontoxic Concentrations of Fluorine in the Prevention of Deafness from Otosclerosis and Fibrosis. *Arch. Otolaryng.* 39:152-154 (Feb.) 1944.
30. Aisenberg, M. S.: Further Studies of Exposed Pulp as Portal of Entry for Poliomyelitis Virus. *J. Am. Dent. A.* 33:1109-12 (Sept. 1) 1946.

Mechanism of Action of Fluorine on Tooth Structure

The means by which trace amounts of fluorine confer such protection to the tooth structure continue to provide an area of considerable study. Gottlieb⁽³¹⁾ states that "Sodium fluoride attracts calcium with a power twice the attraction of oxygen for iron, but does not coagulate protein. When the organic matter in the enamel is fluorinized it attracts calcium from its surroundings and from the saliva. The attracted calcium combines with the fluorine to form insoluble calcium fluoride, thereby obstructing the invasion roads." The "invasion roads" are the organic channels of the enamel, considered until recently as completely inorganic.

Gerould⁽³²⁾, using the electron microscope and the polystyrene silica-surface replica technique, showed that fluorine ingested during tooth development combines with tooth structure in a different way from topically applied fluorine. Fluorine ingested during the years of tooth development is presumed to become caries-resistant calcium fluorapatite, while fluorine absorbed directly into the erupted teeth becomes calcium fluoride, also caries-resistant. Gerould explains the caries-resisting action of fluorine as follows: When oral *Lactobacillus acidophilus* or other acidogens form acid which attacks the enamel, the soluble hydroxyl apatites are dissolved first, leaving a concentration of calcium fluoride or fluorapatite on the surface. The more intense the dissolution by the acid-forming bacteria, the greater the concentration of the fluoride ions, until the concentration is so high that bacterial growth and acid formation are inhibited.

The Prevention of Dental Caries as a Public Health Problem

Dean and his associates^(2b,c,9c) observed that differences in the counts of *Lactobacillus acidophilus* in the saliva corresponded to the differences in the dental caries experience in the groups studied. From the nutritional point of view, the extensive work of Boyd and Drain⁽³³⁾, Bunting⁽³⁴⁾, and Jay⁽³⁵⁾ would indicate that *L. acidophilus* counts

can be reduced by the restriction of carbohydrate in the diet. Thus it would appear that the incidence of dental caries could be reduced if the public could be taught to consume less carbohydrate food—especially refined sugar, the greatest single source of carbohydrate. Since public education along this line would be a slow and difficult process, it appears that the addition of fluorides to the water supply, to bring the fluoride content of drinking water up to 1 part per million, provides the best method of mass partial control of dental caries available at present.

As Dean stated in 1944⁽³⁶⁾, "the possibility of partially controlling what is frequently termed the most prevalent disease of civilized man, dental caries—at a cost of a few cents per person per year—constitutes a pressing challenge" to all concerned with the health of the public. This challenge was not without response. Today a growing list of communities are adding fluorides to their water supplies, under very carefully controlled conditions, to bring the fluoride content up to 1 part per million. Among these communities are Grand Rapids and Midland, Michigan; Evanston, Illinois; Sheboygan, Wisconsin; Newburgh, New York; Marshall, Texas; Ottawa, Kansas; Southbury, Connecticut; and Brantford, Ontario (Canada). Cities which have the plan under consideration include Rochester, Minnesota; Summit, New Jersey; and Charlotte, North Carolina.

The effectiveness of the addition of fluorides to the water supply may be tentatively indicated within a few years in Grand Rapids, Brantford, and Newburgh—communities which started their studies during 1945. The more definitive results, however, will not be evident until one generation has been continuously exposed to fluoride-containing water through the first eight years

31. Gottlieb, B.: Caries Prophylaxis, *Texas Dent. J.* (Jan.) 1947.

32. Gerould, C. H.: Electron Microscope Study of the Mechanism of Fluorine Deposition in Teeth, *J. Dent. Research* 24:223-233 (Oct.) 1945.

33. (a) Boyd, J. D., Drain, C. L., and Nelson, M. V.: Dietary Control of Dental Caries, *Am. J. Dis. Child.* 38:721-725 (Oct.) 1929; (b) Boyd, J. D., Drain, C. L., and Stearns, G.: Nature of Diet in Its Relationship to Control of Dental Caries, *Proc. Soc. Exper. Biol. & Med.* 36:645-646 (June) 1937; (c) Boyd, J. D. and Drain, C. L.: Arrest of Dental Caries in Childhood, *J.A.M.A.* 90:1867-1869 (June 9) 1928.

34. Bunting, R. W., Jay, P., and Hard, D. G.: Report of Successful Control of Dental Caries in Three Public Institutions, *J. Am. Dent. A.* 18:672-678, 1931.

35. Jay, P., Hadley, F. P., and Bunting, R. W.: Observations on Relationship of *Lactobacillus Acidophilus* to Dental Caries in Children during Experimental Feeding of Candy, *J. Am. Dent. A.* 23:846-851 (May) 1936.

36. Dean, H. T.: On the Epidemiology of Fluorine and Dental Caries, in *Fluorine in Dental Public Health*, published by the N. Y. Institute of Clin. Oral Path. (Oct. 30) 1945, p. 19.

of life and has been compared with a control group at two-year intervals up to the age of 14 years. Therefore, not until 1960 may the anticipated proof of Dean's hypothesis be available.

It seems reasonable to expect that the hypothesis will be confirmed. Hence, fluorination projects, established with proper controls before the final results of the initial investigations are available, will likely have gained years of protection against dental caries for the coming generations.

Discussion

Member: You talk about the dangers of accidentally dropping an entire day's supply of fluoride into the water supply. What are the chances of this accident's occurring?

Dr. Stadt: My reference to the accidental addition of the entire contents of a hopper of sodium fluoride was intended only to exaggerate the situation. As I pointed out, a little more than 300 pounds of 90 per cent pure sodium fluoride would be required daily for the city of Charlotte. If the total contents of the fluoride hopper, about 500 pounds, were for some extraordinary reason dumped into the water supply at one time, the concentration of the fluoride in the water storage would still be well within safe limits.

The machinery employed for the addition of sodium fluoride would be equipped with an alarm (both red light and ringing bell) to indicate any appreciable under- or over-feed, a totalizer to indicate the total pounds of the chemical fed, and a recorder to indicate on a 24-hour chart when the feeder was started and stopped, the weight fed over any period, the weight of chemical in the hopper at any time, and the time at which the hopper was refilled. Thus the possibility of such an accident would be exceedingly remote.

Member: Would it be possible to add sodium fluoride to the private water supply in the home?

Dr. Stadt: It is possible, but the cost for an individual family at the present time (in the case of a private well) would be exorbitant.

Dr. Robert F. Young (Halifax): Has any investigation been done on placing fluorides in tablets?

Dr. Stadt: Yes, but there is no adequate evidence available to indicate that this use of fluoride will be of any benefit. In addition, there is the danger of overdosage, which would cause mottling of the enamel.

Two thirds of our population are supplied by communal water supplies. If the addition of fluorides to communal water supplies becomes standard procedure throughout the country, how will we best provide caries control for the children of the other third of our population? Continuing studies on the use of fluorides or other chemicals in mouth washes, in dentifrices, and in solutions and cleaning pastes applied directly to the teeth by the dentist, may provide us with the answer to this problem.

Dr. John W. Williams (Williamston): Does fluorine account for the fact that better teeth are found in the population west of the Mississippi?

Dr. Stadt: There's no question about it. Dr. Dean and his associates of the U. S. Public Health Service have pointed out this relationship, stating that 79 per cent of the areas of endemic dental fluorosis—that is, mottled enamel—are located west of the Mississippi.

I might add, in conclusion, that the American Dental Association has now gone on record as favoring the use of topical applications of 1 and 2 per cent solutions of sodium fluoride to the teeth of children—especially to newly erupted permanent teeth—for the prevention of significant amounts of dental caries.

ROUTINE BLOOD CULTURES IN PEDIATRICS

E. S. KING, M.D.

WINSTON-SALEM

Bacteriologic culture of the blood employing appropriate culture media can be an extremely important diagnostic tool in pediatric practice. The usefulness of the procedure, however, is dependent upon the care with which it is done and upon a knowledge of the indications for its use. Full value cannot be obtained except from a laboratory prepared not only to make the initial culture and interpret the result, but also to continue any further differential studies required for the final identification of the organism or organisms. Unless blood cultures are carefully done and carefully interpreted by trained personnel, they may serve no useful purpose.

Possible Sources of Confusion

At times the results obtained from a blood culture are more confusing than enlightening. The explanation for such a situation can frequently be found in one of the following possibilities:

1. Contamination of the cultures through faulty technique.
2. The appearance of a totally unsuspected organism, either as a pure culture or as a member of a mixed infection.
3. The presence of a so-called nonpathogenic organism.

The first of these possibilities is avoided by strict aseptic technique; the occurrence of the second may be confirmed by repeated cultures; and confusion resulting from the last may be cleared up by changing our understanding of the term "nonpathogenic organism." Strict adherence to the definition of the word is dangerous practice, because we occasionally see cases of bacteremia or

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septicemia due to so-called nonpathogenic bacteria. In one patient seen in our hospital recently the only organism cultured on numerous attempts was *Bacillus subtilis*. It is necessary to consider these organisms as potentially pathogenic, and to remember that they can acquire pathogenicity, especially in patients with lowered immunity. In this connection, one must recall that immunity in young infants is only of a passive nature, and that until the baby reaches the antibody-producing age, organisms not frequently seen in infections of older children or adults may invade the blood stream. Since age *per se* does not ensure full and complete "antibody maturity," older children may also lack the necessary weapons to fight these unsuspected invading organisms.

Number of and Indications for Blood Cultures

The number of cultures required to establish the presence of bacteremia varies widely, but is usually between one and nine. We find that the best plan is to make two or three cultures a day for two or three days. This method favors quick diagnosis and the early institution of specific treatment. A greater number may be required to establish the diagnosis, and a much greater number is needed in following the course of the disease.

It would not be wise to attempt to enumerate the many clinical conditions in which blood cultures may be an aid in diagnosis. Suffice it to say that they are indicated in every case of obscure illness accompanied by fever and signs of infection. Culture of the blood should be routine in such cases. Dunham⁽¹⁾ states that "many cases of septicemia are overlooked or are diagnosed only when localized lesions appear unless blood cultures are made in all cases of obscure illness in the neonatal period."

Types of Septicemia

On the basis of clinical manifestations, septicemias may be divided into three broad groups:

1. Those occurring in the newborn.
2. Those occurring as part of a bacterial disease.
3. Those occurring without an explanation as to the point of entry of the

organism.

Septicemia may exist in the newborn without fever or leukopenia. Jaundice is frequently observed in newborn babies with blood-stream infections due to *Escherichia coli*, staphylococci, or *Pseudomonas aeruginosa*. The streptococcus is, however, the most frequent blood-stream invader in the newborn.

Typhoid bacteremia, pneumococcic bacteremia as a part of pneumococcic pneumonia, and the bacteremic phase of meningococcic meningitis are well-known examples of bacteremia occurring as part of a bacterial disease.

Perhaps the most baffling of the three categories is the last, in which the source of the organism is unknown and the probability and site of localization are equally uncertain.

Incidence of Septicemia

A question that we have been interested in for some time is this: How frequently is the blood stream invaded by the "opportunistic" organism in the apparently healthy person? Some investigators have reported this occurrence in a very large percentage of individuals examined. Okell and Elliott⁽²⁾ stated that 10 per cent of 110 patients with poor oral hygiene showed cocci in their blood cultures. Murray and Moosnick⁽³⁾ reported that 55 per cent of 336 patients with dental disease had positive blood cultures an hour after they were allowed to chew paraffin. These observations were made in adults, but one might expect comparable results in younger patients with corresponding mouth lesions.

Following surgical procedures

Fischer and Gottdenker⁽⁴⁾ made blood cultures on 50 patients two hours after tonsillectomy and found that 16, or 32 per cent, had either staphylococci, pneumococci, or streptococci in their blood streams. Southworth and Flake⁽⁵⁾ reported a study of 22 tonsillectomy cases in which blood was taken for culture immediately after the patient

1. Dunham, E. C.: Septicemia in the New-Born. *Am. J. Dis. Child.* 45:229-253 (Feb.) 1933.

2. Okell, C. C., and Elliott, S. D.: Bacteraemia and Oral Sepsis with Special Reference to Aetiology of Subacute Endocarditis. *Lancet* 2:869-872 (Oct. 19) 1935.

3. Murray, M., and Moosnick, F.: Incidence of Bacteriemia in Patients with Dental Disease. *J. Lab. & Clin. Med.* 26: 801-802 (Feb.) 1941.

4. Fischer, J., and Gottdenker, F.: Über transitorische Bakterieneinschwemmung in die Blutbahn nach Tonsillektomie. *Wein. klin. Wchnschr.* 49:177 (Feb. 7) 1936.

5. Southworth, H., and Flake, C. G.: Blood Cultures after Tonsillectomy. *Am. J. M. Sc.* 195:667-672 (May) 1938.

was anesthetized and again five minutes post-operatively. Three, or 13.6 per cent, of the preoperative blood cultures, and four, or 18.2 per cent, of the postoperative cultures were positive. In no case was there growth in both the preoperative and postoperative cultures.

Seifert⁽⁶⁾ found positive blood cultures in 22 per cent of a group of patients who had just had appendectomies. This same author reported a study of single blood cultures taken ten minutes after surgical incision of abscesses. He found that 45 per cent of them were positive, and further, that the same organism was identified in the blood as in the pus.

Such findings require that we give some thought to the bacteremic state induced by surgical procedures, and, if practical, employ chemotherapy at the appropriate time in order to avoid possible serious complications. This consideration becomes more important when the patient is below par physically or has cardiac damage from rheumatic fever or other diseases, including congenital abnormalities.

In hospital patients

Between 1942 and 1946, blood cultures were made from 1929 patients on various services in the North Carolina Baptist Hospital. The results are shown in table 1. The incidence of bacteremias is not exceedingly high, but is great enough to be significant. Since some of the patients were getting antibacterial therapy at the time the blood was taken for culture, PABA was added to all culture media to act as an antagonist to sulfonamides, so that the organisms present in the blood sample would have a fair chance to grow. Apparently it is not necessary to include a penicillin antagonist in the culture medium. The higher incidence of positive cultures on the urologic, obstetric, and orthopedic services seems to confirm the belief that surgical procedures serve as channels through which resident bacteria find an entrance into the circulation.

Organisms Isolated by Blood Culture

In the pediatric cases⁽⁷⁾ the staphylococcus was found more frequently than any other single organism, appearing in 55.9 per cent

Table 1

The Incidence of Positive Blood Cultures in Patients on Various Services in the North Carolina Baptist Hospital, 1942-1945

Number of Admissions	Cases in Which Blood Cultures Were Made		Cases in Which Cultures Were Positive	
	No.	Percent. (Of admissions)	No.	Percent. (Of cases in which cultures were made)
Pediatrics				
2176	370	17.46	23	6.21
Medicine				
5703	1104	19.3	41	3.7
Surgery				
5316	189	3.5	10	5.3
Urology				
2262	119	5.2	11	9.2
Obstetrics and Gynecology*				
3427	190	5.5	16	8.4
Orthopedics				
1388	52	3.7	5	9.6

*Two years only, 1942-1943

of the positive blood cultures. In the 23 cases in which positive cultures were obtained, staphylococci appeared thirteen times, alpha streptococci five times, pneumococci twice, and beta hemolytic streptococci, meningococci and *Bacillus subtilis* once each. In adults, on the other hand, the staphylococcus is much less common than the streptococcus. Among the patients on the adult medical service⁽⁷⁾, 55.2 per cent of the total of 41 positive cultures were alpha streptococci. The explanation for the more frequent occurrence of streptococci in the blood stream of adults probably lies chiefly in the fact that chronic foci of infection are much more common in adults.

Streptococcus sanguis

A new organism was encountered in 2 patients from the pediatric group. The occurrence of this organism in subacute bacterial endocarditis was first noted by Loewe and his coworkers⁽⁸⁾ in 1946, and later by White and Niven⁽⁹⁾. The name given it originally was *Streptococcus s.b.e.*, but it has since been named *Streptococcus sanguis*. It has not been found to cause any disease process except subacute bacterial endocarditis. The first group of authors discovered the organism by detailed blood culture studies in a group of patients who failed to respond to the usual

6. Seifert, E.: Über Bakterienbefunde im Blut nach Operationen. Arch. f. klin. Chir. 138:565-586, 1925.

7. King, E. S.: Observations on 2233 Blood Cultures and Their Interpretation, to be published.

8. Loewe, L., Plummer, N., Niven, C. F., Jr., and Sherman, J. M.: *Streptococcus S.B.E.* in Subacute Bacterial Endocarditis. J.A.M.A. 130:257 (Feb. 2) 1946.

9. White, J. C. and Niven, C. F., Jr.: *Streptococcus S.B.E.*: *Streptococcus* Associated with Subacute Endocarditis. J. Bact. 51:717-722 (June) 1946.

treatment with penicillin and heparin. They have now identified the organism in nearly 200 cases; in each case the organism possessed certain physiologic and serologic characteristics which distinguished it from any other previously known green streptococcus. The organism has been found to constitute about one third of all types identified from a large group of alpha streptococci. One of its most important properties therapeutically is its greater resistance to penicillin. Standard sensitivity tests show it to be resistant to concentrations as high as 5 units per cubic centimeter, whereas many other species of alpha streptococci yield to penicillin in concentrations of 0.5 unit or less per cubic centimeter. This finding evidently explains why some cases of subacute bacterial endocarditis fail to respond to treatment, or continue to have recurrences.

Ordinary culture methods reveal nothing to make one suspect the presence of a new, different, and resistant organism. It grows in small colonies, is green in color, and arranges itself in chains, as do all other alpha streptococci. It possesses certain physiologic properties, however, which serve to distinguish it from the more common alpha streptococci found in subacute bacterial endocarditis, such as *Streptococcus salivarius*, *Streptococcus mitis*, *Streptococcus bovis*, *Streptococcus agalactiae*, and *Streptococcus faecalis*. In addition, *Streptococcus sanguis* is serologically distinct from other types of alpha streptococci, so that it seems to comprise a relatively homogenous group. Washburn, White and Niven⁽¹⁰⁾ have subjected all the isolated strains to agglutination and precipitation studies, and have shown that they fall into two distinct serologic groups, which are called types I and II. About 95 per cent fall into the first group and about 5 per cent into the second. The precipitation test has been found to be more satisfactory than the agglutination test in the serologic differentiation.

Attempts to discover the habitat of this organism in the human body have been unsuccessful. The gums, teeth, pharynx, and nasopharynx have all been carefully investigated, with entirely negative results. It has been recovered once in a cultural study of an extracted tooth, and once from the washings

of a chronically infected maxillary sinus. All other efforts to find it in various sites in the body have ended in failure. Since *Streptococcus sanguis* has a high tolerance for bile, investigators have investigated the intestinal tract as a possible source of the organism. So far these investigations have been fruitless.

Sensitivity Determinations as a Guide to Treatment

Sensitivity tests are simple to do and interpret, and require little in the way of equipment. Anyone with reasonable technical training can satisfactorily perform them. They should be a routine part of blood culture studies, because of the marked variation in the susceptibility of organisms to the various chemotherapeutic agents. The purpose of the laboratory is to aid the clinician, but here it may be said to do more than aid: it actually directs the choice of the drug or drugs and the dosage employed. Thus it frequently determines the outcome of the case.

The desirable procedure in the management of bacteremia is to isolate the organism, determine its comparative susceptibility to the accepted group of drugs, and then employ the most effective drug in the dosage indicated by the test. Subsequent cultures should be obtained after treatment has been started, to show when the organism disappears from the blood, and also to reveal any change in susceptibility to the drug. It is a well known fact that an organism can acquire drug-fastness when the dose of the drug has been too small. Organisms develop drug-fastness to sulfonamides more frequently than to penicillin. Harrell and his coworkers⁽¹¹⁾ have recently shown that some bacteria may become resistant to streptomycin in as short a time as eight hours. Once resistance is acquired, it increases until the drug used becomes completely ineffective in any dosage. This fact emphasizes the importance of sensitivity tests to determine the proper dosage before administration of the drug is begun.

In situations where laboratory facilities are not available, or where the patient's condition is too critical to allow time for the desired studies, chemotherapy should be begun

10. Washburn, M. R., White, J. C., and Niven, C. F., Jr.: *Streptococcus S.B.E.: Immunological Characteristics*, J. Bact. 51:723-729 (June) 1946.

11. Aikawa, J. K., Gillikin, C. M., Herndon, E. G., Jr., and Harrell, G. T.: Simple Laboratory Aids for the Control of Streptomycin Therapy in General Practice, South. M. J. 40:111-153 (Feb.) 1947.

immediately after blood is taken for culture. As to dosage under these conditions, it is probably better to give too much than too little. Future changes in therapy can be dictated by the results of the blood culture and sensitivity tests. The blood stream is sterilized by penicillin within twelve to twenty-four hours when a susceptible organism is present; therefore, blood must be taken for culture before or soon after penicillin therapy is begun.

Of the different species of gram-positive cocci usually encountered in subacute bacterial endocarditis, the two most resistant and difficult to treat successfully are *Streptococcus faecalis* and *Streptococcus sanguis*. MacNeal and Blevins⁽¹²⁾ reported the isolation of a strain of the former organism which resisted *in vitro* destruction by 500 units of penicillin per cubic centimeter, but yielded easily to enterococcus bacteriophage.

In our group of 23 pediatric cases with positive blood cultures, we did not encounter a single case of bacteremia from a gram-negative bacillus. This type of infection may occur, of course, and when it does, streptomycin would probably be the drug of choice. Sulfonamides might also prove to be highly valuable, however.

The Prevention of Septicemias

The treatment of infections of the circulatory system has been completely revolutionized in the past decade. Scientists are constantly searching for new and more powerful antibacterial agents, both chemotherapeutic and antibiotic. We now talk freely about "cure" of septicemia—an accomplishment seldom possible until very recently. Equally important is the prevention of blood-stream infections. Damage to the lining of the circulatory system, especially the heart, and to various other organs, can in many cases be prevented by the prophylactic use of sulfonamides or penicillin before and after the performance of surgical procedures such as the removal of tonsils, the extraction of diseased teeth, and the incision of abscesses. This prophylaxis is particularly indicated in patients who are run down or below par, and even more important in patients with congenital or rheumatic heart disease.

12. MacNeal, W. J., and Blevins, A.: Bacteriological Studies in Endocarditis, *J. Bact.* 19:603-610 (June) 1945.

Summary

1. In the performance of blood cultures careful technique and the choice of appropriate media are essential.

2. A blood culture study is indicated in every obscure illness with fever and signs of infection, and in occasional cases without these signs, especially in the neonatal period.

3. Therapy should be guided by sensitivity tests made with the drug or drugs under consideration.

4. In children who are below par physically and in whom surgery is necessary sulfonamides or penicillin should be employed before and after operation as a prophylaxis against bacteremia. Children with rheumatic or congenital heart disease particularly need prophylactic therapy during bacterial infections and before and after surgical procedures.

ATLANTOCRANIAL DISLOCATION WITH SURVIVAL

A Case Report

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WILMINGTON

The rising volume and speed of travel on our highways has resulted in an increase in both the incidence and the complexity and unusual nature of bodily injuries encountered. Patients injured by automobiles are usually orthopedic problems, but most often are treated by the general surgeon or general practitioner, at least in the early stages of their illness. The purpose of this paper is to report an unusual injury—namely, posterior dislocation of the skull on the first cervical vertebra—treated on a general surgical service. An exhaustive search of the literature failed to unearth any reference to a similar injury. More than two hundred original articles were read, and the Research Department of the American College of Surgeons reviewed all the literature available to them. A few cases of fracture of the atlas have been reported, and about 200 cases of dislocation of the atlas on the axis; none of these cases have involved the atlantocranial

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Fig. 1



Fig. 2

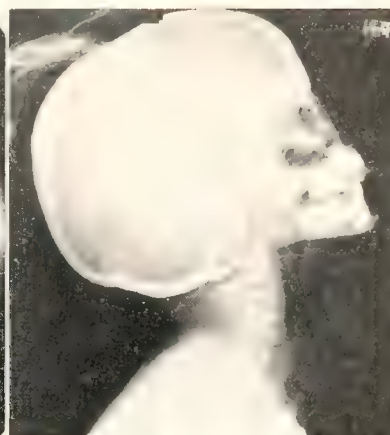


Fig. 3

joint, however.

Report of Case

The patient, a 6-year-old white boy, was struck by an automobile on March 5, 1945. Apparently the bumper and left front fender struck his body, giving the characteristic "whip-lash" effect to the head and neck as he slid back over the fender. The trunk and extremities suffered only minor contusions. He was brought into the emergency room, jack-knifed in his father's arms, his chin resting on the sternum. When he was placed on the examining table it was obvious that the alignment of the neck was incorrect, and I extended the head into the accepted position for neck injuries. Respirations and

heart action ceased immediately, but resumed when the head was returned to its former position of flexion. Gentle manual traction was applied, and an x-ray made (fig. 1). The report was: "There is anterior dislocation of the first cervical vertebra on the skull."

Manual reduction was considered, but this idea was abandoned, since the slightest motion of the head caused marked irregularity of the pulse and respirations. General neurologic examination was entirely normal, and remained so throughout.

A halter was fashioned to supply traction with the neck flexed, and fifteen pounds' pull was instituted with the child supine in an inclined bed. An x-ray made two days later



Fig. 4

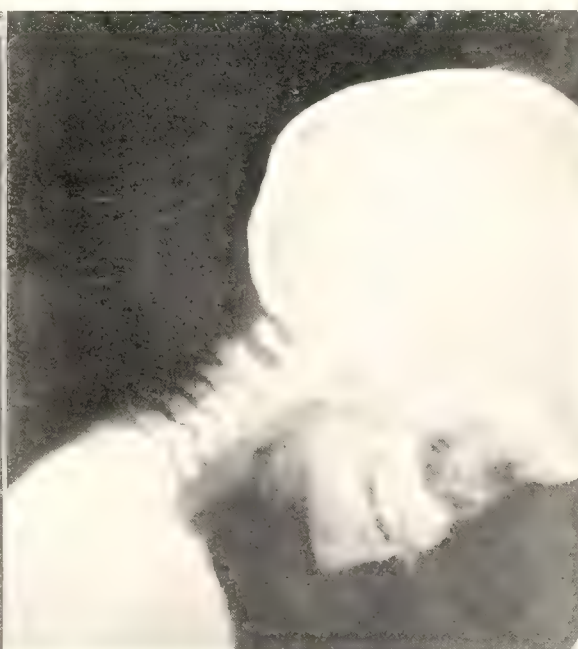


Fig. 5

(fig. 2) showed only slight improvement, and the pulse and respirations continued quite erratic. By the third day the patient had become so active that it was impossible to keep him in any position more than a few minutes at a time; the pulse and respirations were regular. The halter was adjusted to a more comfortable position midway between flexion and extension, the same traction being maintained. At the end of two weeks no further improvement in the position could be detected by the x-ray. Manual traction was carefully exerted and the patient was taken to the cast room and seated on a stool. By means of pulleys, traction was applied vertically with the head erect. About 20 pounds of weight was added, so that he was almost lifted off the stool, and a plaster cuirass was applied to the trunk, neck, and head. An x-ray made through the cast (fig. 3) showed no change in the dislocation.

A few days later the patient was discharged in excellent condition. During the next four months he wore the cast with little, if any, inconvenience. He rode his bicycle, played ball, and did all the things a boy of his age would do. At the end of four months the cast was outgrown and completely worn out. It was replaced by a neck brace. An x-ray was made (fig. 4) and showed that "The dislocation previously demonstrated has been completely reduced." The brace was kept tight enough to prevent motion of the head for four months, and then gradually lowered. Twelve months after the injury full range of motion was permitted, and the brace was discarded. X-rays made in flexion (fig. 5), extension, and mid-position showed that the reduction was maintained.

It has now been two years since the original injury, and the child is normal in every respect. He has full range of motion.

Discussion

The joint between the skull and the atlas is mechanically unstable. The articular surfaces are flat, almost horizontal, planes allowing a wide range of motion, but the ligamentous and muscular attachments are strong. This joint probably owes its immunity to injury more to weakness of the joints below than to inherent strength. Brookes⁽¹⁾ reported that half the injuries to the cervical spine occurred at the atlanto-axial joint.

1. Brookes, T. P.: Dislocations of the Cervical Spine, *Surg., Gynec. & Obst.* 37:772-782 (Dec.) 1933.

Wolff⁽²⁾, in reviewing autopsy records on criminals who died by hanging, found many types of injuries, all located at or below the atlanto-axial joint.

Summary

A case of posterior dislocation of the skull on the atlas has been presented. The patient survived with no residual disability. No similar case could be found in medical literature.

2. Wolff, R.: Injury to Cervical Vertebrae as Result of Judicial Hanging, *J.M.A. South Africa* 2:160-162 (Sept. 8) 1928.

Maternal Welfare Section

CASE REPORTS FROM THE MATERNAL WELFARE RECORDS

Anesthetic Accidents

Obstetric anesthesia has been of interest from earliest times. The literature upon the subject is constantly increasing as the search for an ideal obstetric anesthetic continues. Articles describing new methods or modifications of the older ones often make far-reaching claims which seldom meet the test of time.

The ideal obstetric anesthetic would be one which affords complete relief of pain, with absolute safety for the mother and no adverse effects upon the child. It is unfortunate that no such method is available; although all of the standard anesthetic agents are relatively safe, they must be administered by trained personnel employing special techniques if good results are to be obtained.

Twelve of the first 175 consecutive maternal deaths analyzed by the Maternal Welfare Committee were the result of anesthetic accidents. The two case reports which follow illustrate common anesthetic problems.

Case 1—N. C. M. W. C. 42

A married white woman, 34 years of age, consulted her physician in the third month of pregnancy. She had no complaints and her past history revealed no significant illnesses or operations. Two previous pregnancies had been uncomplicated and had resulted in the delivery of living children.

*Prepared for the Maternal Welfare Committee of the Medical Society of the State of North Carolina.

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Physical examination did not reveal any abnormalities. The pelvic measurements, both internal and external, were within normal limits. The urinalysis and blood count were normal, and the Wassermann test was negative.

The patient's prenatal course was uneventful. She visited her doctor twelve times during the prenatal period; on each occasion the blood pressure, urine, and fetal development were considered to be normal.

On September 1, 1946, labor began spontaneously. One hundred milligrams of demerol and 0.4 mg. of scopolamine were used for analgesia during the six-hour labor. The presentation was vertex with the occiput in the left anterior position, and the head appeared at the introitus.

A hospital nurse administered ether by the open-drop method for the obstetric anesthetic. As anesthesia was being induced, the patient vomited and aspirated a large amount of semi-solid and liquid vomitus into the trachea and bronchi. She became cyanotic; her pulse rate rose to 160 per minute, and her blood pressure fell to 80 systolic, 20 diastolic. As much material as possible was removed from the pharynx and trachea by suction. The patient was delivered with outlet forceps, and a small episiotomy was repaired quickly. The baby was normal, and weighed 7 pounds, 12 ounces.

Examination of the chest following delivery revealed numerous moist and bubbling rales throughout both lungs. During the puerperium, the patient continued to be mildly cyanotic, and the pulse rate remained at 120 or above in spite of continuous oxygen therapy. The temperature increased progressively, and became septic in type, rising to levels of 104 F. and above during the last forty-eight hours of her life. The patient died on September 3 of a rapidly progressive bronchopneumonia, in spite of heroic therapy with penicillin and sulfadiazine which was begun immediately following delivery. A competent medical consultant assisted in the postpartum care of the patient. Permission for an autopsy could not be obtained.

Discussion

Three deaths due to aspiration of stomach contents during ether anesthesia have been reported to the Maternal Welfare Committee. Many additional non-fatal cases have come to our attention; in each instance, the patient very nearly lost her life. The gastric emptying time is often prolonged during labor, and this statement applies to liquid as well as solid food. It is not unusual for a patient to vomit food ingested twenty-four hours or more prior to the induction of anesthesia. Aspiration of the vomitus occurs while the laryngeal reflexes are abolished during general anesthesia.

Mendelson⁽¹⁾ studied 66 such cases which occurred in the New York Lying-In Hospital from 1932 to 1945. He stated that "two entirely different syndromes may follow aspiration. Aspiration of solid food usually produces the well-known picture of laryngeal

or bronchial obstruction. Complete obstruction produces suffocation. Incomplete obstruction produces massive atelectasis with the classical picture of cyanosis, tachycardia, dyspnea, mediastinal shift, and signs of consolidation over the collapsed area . . . Aspiration of liquid material produces an asthmatic-like syndrome with distinct clinical, roentgenologic and pathologic features . . . There is cyanosis, tachycardia, and dyspnea, but no mediastinal shift or massive atelectasis. Wheezes, rales, and rhonchi are heard over the affected portions of the lungs."

Aspiration of stomach contents into the lungs is preventable. Mendelson's recommendations to avoid this complication included: (1) withholding of oral feedings during labor, (2) wider use of local anesthesia where indicated and feasible, (3) emptying of the stomach prior to administration of the general anesthetic, (4) adequate delivery room equipment, including transparent anesthetic mask, tilting delivery table, suction apparatus, laryngoscope, and bronchoscope.

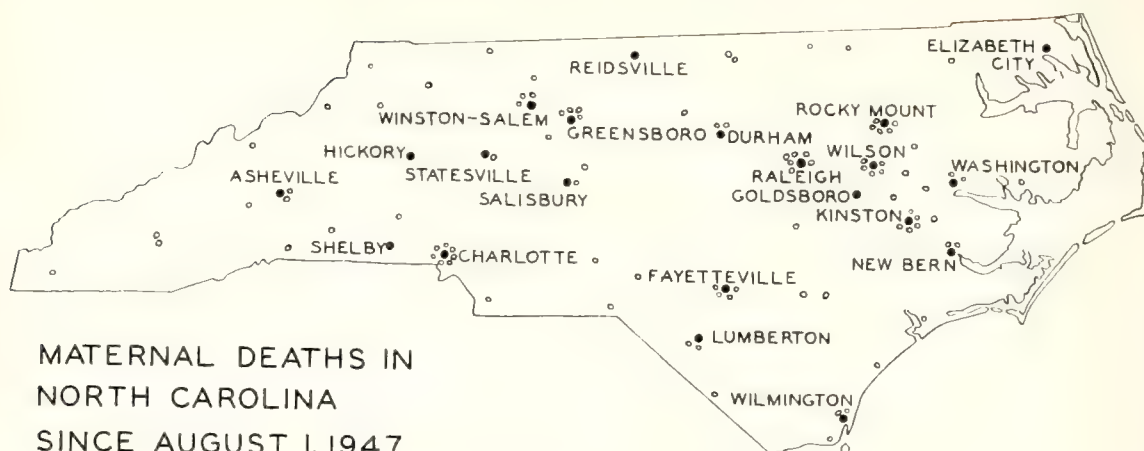
A competent anesthetist should be employed in all obstetric cases. If gagging or retching occurs during the induction of anesthesia, the patient should be encouraged to vomit, and under no circumstances should an attempt be made to force the anesthesia if the stomach has not been emptied.

If aspiration occurs, as much solid and liquid material as possible should be removed from the trachea and pharynx by suction. Bronchoscopy may be necessary for the removal of pieces of solid food. The patient should be put in the head-down position for drainage of the bronchial tree, and coughing should be encouraged to eliminate as much foreign material as possible. Large amounts of oxygen are often necessary to combat the associated asphyxia.

Case 2—N. C. M. W. C. 37

A married colored woman, 21 years of age, consulted a physician in the fifth month of her first pregnancy. A complete history and physical examination revealed no abnormalities. External and internal pelvic measurements were within normal limits. The urinalysis and blood count were normal, and the Wassermann test was negative. The patient's prenatal course was uncomplicated; and the blood pressure, urine, and fetal development were found to be normal at each of eight prenatal examinations. No evidence of toxemia of pregnancy occurred, and her condition was excellent when labor began spontaneously on November 27, 1946.

1. Mendelson, C. L.: Aspiration of Stomach Contents into the Lungs during Obstetric Anesthesia, *Am. J. Obst. & Gynec.* 52:191-205 (Aug.) 1946.



MATERNAL DEATHS IN NORTH CAROLINA SINCE AUGUST 1, 1947

The presentation was vertex, and although the progress of labor was quite slow, it was considered satisfactory. Complete dilatation of the cervix was noted after approximately twenty hours of labor. At 5 p.m. on November 28, after twenty-five and a half hours of labor, the presenting part was in the mid-pelvis in the right occiput transverse position. The attendant decided that a forceps delivery was indicated, and preparation was made for this obstetric operation.

Spinal anesthesia was selected, and a spinal puncture was made between the third and fourth lumbar vertebrae without difficulty. Twenty milligrams of pontocaine was used as the anesthetic agent. It was administered slowly, the patient was scrubbed and draped, and all preparations were made for delivery. As the patient was being examined prior to the application of forceps, she gasped and died suddenly.

A stillborn child weighing 8 pounds, 3 ounces, was delivered without difficulty after the mother's sudden death. Permission for an autopsy could not be obtained.

Discussion

A strong trend to the use of regional anesthesia in obstetrics has developed since the original publications on caudal anesthesia appeared. DeLee has long advocated the use of local infiltration for obstetric anesthesia, and has cautioned against the danger of profound anesthetic reactions when spinal anesthesia is used in obstetrics. Cosgrove, Hall, and Gleeson⁽²⁾, as well as Parmley and Adriani⁽³⁾ have clearly shown that spinal anesthesia is a safe obstetric method if special techniques are used and if the dosage of the anesthetic is approximately half that ordinarily used for surgical procedures. Cosgrove recommends 50 to 75 mg. of novocain as the spinal anesthetic agent. Adriani uses

3 mg. of nupercaine in combination with dextrose to produce a hyperbaric solution which will gravitate to the lower part of the spinal canal, producing a saddle-block type of anesthesia.

In the experience of the Maternal Welfare Committee, any elevation in blood pressure or evidence of toxemia of pregnancy is a contraindication to the use of spinal anesthesia. In view of the limited use of this anesthetic method in North Carolina, it represents a particular hazard to the patient unless special techniques are used. Six of our first 175 deaths occurred as the result of a spinal anesthetic. In 5 of the cases, sudden death followed shortly after the administration of the anesthetic agent. In the sixth, an infection occurred, resulting in meningitis and death nineteen days after delivery.

Spinal anesthesia should be administered by a trained anesthetist. A small oral dose of a barbiturate before administration of the anesthetic offers some protection against a reaction to the drug. Ephedrine and the elevation of the patient's legs will assist in combatting a fall in the patient's blood pressure if this occurs. Continuous oxygen is of value in combatting hypotension and nausea and vomiting. The patient's pulse and blood pressure should be checked at intervals of five minutes or less until they are well stabilized. Spinal anesthesia should not be used unless an attendant is present to check the patient's pulse, blood pressure, and respiration. Then an emergency may be handled satisfactorily in most instances.

2. Cosgrove, S. A., Hall, P. O., and Gleeson, W. J.: Spinal Anesthesia with Particular Reference to Its Use in Obstetrics, *Anesth. & Analg.*, 16:234-237 (July-Aug.) 1937.

3. Parmley, R. L., and Adriani, J.: Saddle Block Anesthesia with "Nupercaine" for Obstetrics, *South. M. J.*, 39:191-195 (March) 1946.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

DURHAM

I

THE BEGINNINGS

In 1896, in the preface to his book, *The Surgery of the Chest*, Stephen Paget wrote: "there are signs that we have reached a stage, in this portion of our art, beyond which, on our present lines, we cannot advance much further." This pronouncement, introducing a work authoritative in its time, rings strangely in modern ears; for it was not until thirteen years after the publication of Paget's work that endotracheal anesthesia was evolved and the true advance of thoracic surgery began. Through all the preceding centuries surgeons had fumbled, at first reluctantly, then more daringly, with thoracic problems: the sum of their accomplishments may be reduced to a few sentences. Of the twelve articles in this series, this first will deal with the progress of thoracic surgery from earliest times to the close of the nineteenth century; the remaining eleven will, for the most part, have to do with the tremendous accomplishments in the various branches of thoracic surgery which have taken place in the twentieth century.

Primitive man, observing that the beating of the heart and the expansion and contraction of the chest in breathing are the accompaniments of life and cease with death, came to think of the thorax as the seat not only of life but of the soul and the emotions as well. Thence derived a natural reluctance to interfere with so sacred a repository. This reluctance, together with fear aroused by the observation that penetrating open chest wounds were invariably fatal, stayed the hand of the surgeon for centuries. Except in attempts to repair wounds of the chest and in empyema drainage, surgeons seldom or never invaded the chest cavity.

The earliest surgical records which have been preserved, the Egyptian, show a considerable knowledge of the anatomic structure of the thorax and its organs. Egyptian surgeons, as far as we have evidence, apparently made little use of this knowledge, prob-

ably confining themselves to treatment of fractured and dislocated clavicles, fractured ribs, and minor chest wounds.

The Egyptian knowledge and practices were passed on to the Greeks, who made notable advances. The chief of these was the operation for empyema, *paracentesis pulmonis*. How this procedure originated is not definitely known; it was an established technique in the time of Hippocrates and his school. Physicians were skilled in determining the presence and exact location of fluid in the chest and in selecting the appropriate place and size for the incision, which was made with scalpel or cautery. The drainage was carried on over a period of two days, the wound being stopped with a tent of raw flax. When the drainage was complete, the cavity was partly filled with a mixture of wine and oil, and the wound plugged with a linen cloth. Various complications were provided for as nearly as possible. It was recognized that if the drainage fluid was thin and watery and flowed all at once, or if the fluid was fetid and mixed with blood, the patient died. Hippocrates and his disciples also recognized the symptoms of pleurisy and advocated pneumothorax when the disease came as the sequel of a chest wound or of empyema drainage.

For about eighteen hundred years thoracic surgery made no appreciable progress beyond the teachings of Hippocrates and his school. Celsus and Galen in Roman times followed the dicta of Hippocrates with but slight variations, and relayed them to their successors. The Arabian physicians of the Dark Ages and the European surgeons of the early Renaissance, with but few and inconsiderable exceptions, accepted the authority of the ancients in this as in other fields of surgery. Empyema drainage was widely practised, but there existed otherwise a stern taboo against the invasion of the thoracic cavity.

The sixteenth century saw the authority of Galen assailed by Paracelsus, Vesalius, and Pare'. Freed of this dominance, surgeons came to use their own clinical experience as the basis of new techniques and treatments. New and accurate anatomic knowledge became available. This general advance did not notably affect the progress of thoracic surgery. Pare' himself gained an extensive knowledge of thoracic injuries during his

career as a military surgeon, and his surgical opus contains numerous comments on wounds of the chest and their treatment—comments clearly the result of long and careful observation. He was the earliest surgical writer to present a good description of cutaneous emphysema. Nevertheless Pare' confined himself to wound repair, empyema drainage and the other established procedures, and made no new departures. In like manner the great surgeons who came after him—Fabricius, Willis, Solingen, Wiseman, Baglivi and Belloste of the seventeenth century, and Heister, Me'ry, Hewson, and Richter of the eighteenth century—, while revising conventional techniques and occasionally suggesting new procedures, made few real advances. Anatomic and physiologic knowledge of the thorax and its organs was vastly augmented, meanwhile, by the labor of the dissecting rooms and by such discoveries as that of William Harvey on the circulation of the blood and those of many physiologists and anatomists on the physiology of respiration.

With the nineteenth century came the two great innovations which were to give new life to the whole of surgery—anesthesia and asepsis. These greatly widened the scope of surgery of the thorax by allowing extensive operations on the chest wall and ribs, better management of some wounds of the chest, lung and heart, and better drainage of pleural fluid collections. Pneumothorax, though now no longer a surgical problem, was for decades a serious concern of the nineteenth-century surgeon. The procedure had been suggested by the Hippocratean school as a cure for pleurisy; from the sixteenth century onward, reports appeared advising the practice in cases of pulmonary tuberculosis or describing good results from chest wounds in tuberculous patients. In 1822, after extensive physiologic research, James Carson recommended artificial pneumothorax as a possible cure for pulmonary tuberculosis. His suggestion had little immediate effect—perhaps fortunately, since the aseptic technique had not yet been developed. During the decades that followed, numerous reports appeared describing cases of tuberculosis which were cured following spontaneous pneumothorax. At length, in 1882, Forlanini proposed the production of artificial pneumothorax, and in 1894 he re-

ported on his clinical experience with the operation. Thoracoplasty for the release of a tuberculous lung was first performed in 1885 by De Ce'renville.

Surgery of the heart was even longer delayed. The ancients had believed all heart wounds necessarily fatal; Pare' was the first surgeon to realize that a heart injury might heal, and many reports of spontaneous recovery appeared in the ensuing centuries. As late as 1896, in the work which has been quoted, Paget wrote: "Surgery of the heart has probably reached the limits set by Nature to all surgery: no new method, and no new discovery, can overcome the natural difficulties that attend a wound of the heart." Yet the same year was to see the first successful suture of a stab wound of the heart, by Rehn.

Thus, at the very end of the nineteenth century, thoracic surgery, though still in its infancy, had made a few faltering steps forward, and the way was prepared for the amazing achievements which the past fifty years have seen.

—J. C. T.

Compulsory retirement.—We choose and select when we hire, and I see no reason why we cannot do the same thing when we retire our workers. In 1930 on the basis of a compulsory retirement rule, the most distinguished neurological surgeon the world has yet known, Harvey Cushing, was retired from the Harvard faculty at a time when he was at the peak of his ability. He promptly accepted a full time academic appointment at Yale where he continued his outstanding contributions to medical science. What was Harvard's loss was Yale's gain, but for Dr. Cushing the retirement rule meant only the waste of time and inconvenience of pulling up stakes, moving, and finding a new home. When Dr. Milton J. Rosenau, Professor of Public Health, was retired from the same faculty he, too, moved to another University where the rules were not so blind. From a sociological standpoint the whole thing is ridiculous, and a reflection on the state of our intelligence in solving what ought to be a simple problem. Whenever society adopts a rule that eliminates the fit with the unfit, destroys the good with the bad, or punishes the innocent with the wicked, it is not a good rule. Society progresses by changing rules of this kind. In an imperfect society human beings are pushed around by a faceless mob. But social progress may be measured in the last analysis by the degree of skill and discrimination with which society solves the individual problems of its members.—Theodore Klumpp: *The Future of the Older Worker*, *Geriatrics* 2:169 (May-June) 1947.

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PREVENTIVE MEDICINE AND VOLUNTARY HEALTH INSURANCE

Insurance of any kind is bought to cover the cost of an unpredictable financial catastrophe. Since the occurrence and duration of a severe illness cannot be anticipated, it is impossible to provide for it in the family budget, except by prepaid insurance. Our present Blue Cross plans and their additional benefit policies covering professional fees should undergo periodic scrutiny to make sure that they are fulfilling their purpose. The article on "The Integration of a Public Health Program with the Preventive Aspects of Private Practice," appearing in this issue, offers food for thought on the subject.

Syphilis and gonorrhea are as much acute infectious diseases as are tularemia and

scabies; all are contracted by contact or touching. Why should acute cases of the former infections be excluded from treatment in a hospital if it is advisable? The moral stigma which society has attached to them because of their venereal mode of transmission should not be allowed to affect our scientific thinking. Adequate therapy early in the acute stage would prevent hospitalization later for treatment of complications or of the late lesions. Who can say whether pyelonephritis found at middle age resulted from an inadequately treated gonorrhea, a retrograde infection of the urinary tract with other pyogenic organisms, or a blood-borne embolic infection?

Penicillin offers a very efficacious mode of therapy for the acute case of syphilis or gonorrhea; treatment in uncomplicated early cases can be completed in an average hospital stay of three days for gonorrhea and fourteen days for syphilis. Therapy would be administered by the private physician and not by a governmental agency. The ability of the present system of medical practice to treat patients adequately would be demonstrated, and an argument for continuing the trend toward the socialization of medicine forestalled.

The Hospital Saving Association, in the last revision of its contract, has made a long-needed forward step. Payment for treatment of *mental illness* in a general hospital is now authorized. Prompt attack on acute mental disease, such as a toxic psychosis occurring during an intercurrent illness or during a drug intoxication, is now possible. Therapy with insulin or electric shock for the milder depressions, which are often recurrent or chronic, can be undertaken. The recognition that psychiatric patients are sick people who need and deserve hospitalization will make it possible in many instances to prevent commitment to a special institution. This extension of service will reduce the number of unnecessary admissions to our already overcrowded psychiatric hospitals, and will avoid delay in the treatment of patients who should be cared for promptly and in a general hospital.

Are facilities for the care of such patients being incorporated in the new general hospitals already authorized or planned under the Medical Care Program? Techniques are

known which allow rooms designed and built for the care of psychiatric patients to be promptly converted into ordinary hospital rooms. The Medical Care Commission and the Commissioner of Mental Hygiene should insist that such facilities be included when the buildings are constructed; such an opportunity to improve and extend the care of patients with mental illness will not recur for a generation. The people should be able to obtain the hospital care they need and pay for.

Hospitalization insurance does not pay for admissions for *diagnosis*. An exploratory laparotomy, however—whether or not an appendix is incidentally removed—is just as much a diagnostic procedure as is a gastrointestinal x-ray examination. The fact that supplementary policies covering professional fees pay *only* for surgical procedures results in much injustice. Better medical care would follow recognition of the fact that it is fair and just to pay for professional supervision of hospitalized patients with acute illness who are not operated upon.

Policies which pay professional fees to the surgeon only have increased the aura of glamour which surrounds him in the public eye. There are medical emergencies which are just as unpredictable and which carry just as high a mortality, if they are untreated, as do acute surgical conditions. Surely the proper treatment of coronary occlusion, bleeding peptic ulcer, diabetic coma, or tularemia pneumonia requires as much skill on the part of the physician as does a pelvic "house-cleaning" or a cholecystectomy. Recognition of this principle would enhance the prestige of the family doctor; he would then be on an equal footing with the surgeon in the eyes of the insurance company, and the insurance company helps to mold public opinion. Furthermore, abuse of the insurance principle will be prevented by curtailing unnecessary operations for "acute remunerative appendicitis," for example—operations performed to collect a fee which will cover unpaid-for office and hospital visits during an earlier attack of the same illness.

Large life insurance companies are conducting educational campaigns through lay magazines and the press to *prevent* disease in individuals. If life insurance companies accept as sound the principle of spending money for education, it would seem equally

sound for hospital insurance companies to pay for *immunization*. An effective immunization program offers a more direct and sure return on the investment than does education. Such a program should encompass the needs of the entire family. It should include check-up tests on the effectiveness of the immunization procedures, and repetition of the procedures at necessary intervals. Prophylactic immunization would reduce the number of hospitalizations for acute infectious illnesses, and would lessen the severity—and hence the duration—of such illnesses if they were contracted. The cost of one hospitalization for pneumonia following whooping cough or influenza, or for Rocky Mountain spotted fever, would pay for thousands of doses of prophylactic vaccine or for hundreds of office visits to private physicians who would administer them.

The costs of such an immunization program are immediately and accurately calculable. A great service could be done the people of the state by the inclusion of such a program in the benefits of their hospital insurance. Many people would be immunized against preventable disease who do not now avail themselves of the free facilities of our public health agencies, and another argument for the necessity of socialized medicine would be spiked.

* * * *

A BOOST FOR GENERAL PRACTICE

Within the past year there have been many signs that the general practitioner is coming back into his rightful place as the most important man in medicine. One of the most unexpected bits of such evidence came from the class which graduated from the Bowman Gray School of Medicine of Wake Forest College in December, 1947. A poll of this class revealed that approximately three fourths of its members expect to become general practitioners. The class annual has as its theme the general practice of medicine. Embossed on its leather cover is an old doctor in a horse-drawn buggy. The first pages following the Introduction are devoted to actual photographs depicting scenes in the daily routine of two family doctors—fathers of two members of the graduating class. Both sons expect to follow in their father's footsteps.

The Introduction is quoted in full, because

it is so thought provoking, and so encouraging to those who believe that Osler was right when he said of the family doctor: "He is the standard by which we are measured . . . and the estimate of the profession in the eyes of the public is their estimate of him."

"In this bewildering world of haste and confusion the average person continues to turn to the family doctor for help in time of trouble. However, in the face of ever increasing demand for the services of the practicing physician, the number of men in private practice* is decreasing year by year. In many medical schools throughout the country it is no longer a question of whether a student will go into a specialty but rather which specialty or subspecialty he intends to follow. The student is so over exposed to specialists and researchers that he gets a distorted outlook on the practice of medicine from which he never recovers. He is so impressed with the recognition the specialists and researchers accord one another that he fails to realize that what is needed today is an application of the basic principles of modern medicine to the masses of people.

"The Class of 1947 of the Bowman Gray School of Medicine is proud that a majority of its members are headed for private practice.* The physician fathers of two of our members are shown on the following pages to illustrate, in part, the responsibilities of the family doctor."

* Editor's note: "Private practice" is used here to mean general or family practice.

* * *

MORE BUREAUCRATIC PROPAGANDA

Last summer a House subcommittee headed by Representative Forest A. Harness rendered a distinct service to the nation by calling attention to the illegal use of federal funds "for propaganda activities supporting compulsory health insurance." The report of this committee—House Report No. 786—has been given wide circulation, not only in medical journals but in such lay publications as the *Reader's Digest*. It should do much to counteract the propaganda that continues to emanate from federal bureaucrats.

One of the most recent bits of bureaucratic propaganda is a book of 242 pages, published by Reynal and Hitchcock under the title, 140 MILLION PATIENTS, and retailing for \$2.75. The jacket informs us that the author, Carl Malmberg, "has been a public relations advisor, information specialist for the United States Public Health Service and chief investigator for the United States Senate Subcommittee on Health and Education." The book carries on the back cover the hearty endorsements of Drs. Allan Butler, John Peters, Ernst Boas, and Channing Frothingham, and of Senator Claude Pepper.

Mr. Malmberg knows, of course, which

side of his bread is buttered. In this volume he goes down the line with the familiar Falkian technique, which might be described as snooping, smearing, and sophistry.

The snooping consists in lifting from various reputable medical journals statements critical of American medicine. It is one of the glories of the medical profession that it has always cleaned its own house. and that medical leaders, editors, and authors have not hesitated to point out mistakes in medical practice. Such statements—often taken out of context—are used by Mr. Malmberg to smear the doctors of this country. A few sample headings will illustrate: "And the Poor Get Sicker," "'With the Help of the Lord and the Health Nurse,'" "The Cancer Patient in Blunderland," "Pernicious Anemia—Pernicious Treatment," "This Is Murder," "When Doctors Cause Disease," "Poison by Prescription," "'Hip-Pocket' Hysterectomies," "Other Unnecessary Surgery," *et cetera, ad nauseam!*

The sophistry lies in the "Prescription for Better Health." This, of course, is governmental control of medical practice, financed by compulsory health insurance—or, in plain English, by taxation. The arguments for this are the time-worn, threadbare ones that have been given over and over by Falk and his followers. Certain inconsistencies noted in Mr. Malmberg's book are also apparent in most of the other writings of this group. For example, the reader is told on page 183 that "Under a nation-wide health insurance plan, many more people would have free choice of physician than have it today"; two pages later he learns that "Freedom of choice and personal relationship between physician and patient play not the slightest part in much of the very best medical care received in this country."

The tenacity with which compulsory health insurance is adhered to by many close to Moscow gives point to the conclusion of the Harness Committee's report: "Suffice it at this time for your committee to report its firm conclusion, on the basis of the evidence at hand, that American communism holds this program as a cardinal point in its objectives; and that, in some instances, known Communists and fellow-travelers within the Federal agencies are at work diligently with Federal funds in furtherance of the Moscow party line in this regard."

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

A 72-year-old woman was admitted to the urologic service of the North Carolina Baptist Hospital on July 6, 1947, and died on July 28. She first became acutely ill about twenty-four hours before admission, with fever, pain in the costovertebral angles, and hematuria. Prior to the onset of these symptoms she had had marked burning on urination, and frequency. On the day of admission she had many chills accompanied by high fever. The pain in the costovertebral angles and in the suprapubic region required Demerol for relief. The urine contained numerous blood clots.

The past history revealed that the patient had had previous attacks of pyelitis and pyelonephritis, and had had a bleeding peptic ulcer ten years before her present illness. The ulcer had been controlled by diet. Nothing else of significance was recorded in the history.

Physical examination on admission showed the temperature to be 102.4 F., the pulse 100, respiration 28, blood pressure 75 systolic, 50 diastolic. The patient was acutely ill and was somewhat confused mentally. The skin was hot, dry, and pale. No petechiae were noted, and there was no generalized lymphadenopathy. The pupils were equal, but were moderately dilated and reacted poorly to light; funduscopy showed numerous small white areas in the periphery but no hemorrhages. The trachea was in the midline and the thyroid was not palpable. There were a few moist rales in the bases of both lungs. Percussion showed the heart to be slightly enlarged to the left; the sounds were moderately loud, the rhythm regular. There was an occasional extrasystole, and a grade 2 systolic murmur was heard at the apex. The abdomen showed moderate generalized tenderness without spasm; the tenderness was greatest in the flanks and costovertebral angles, particularly on the left. There was also marked suprapubic tenderness. The peristaltic sounds were normal, and no abdominal masses were felt. There was no peripheral edema. Neuromuscular examination was recorded as being grossly negative except for a cloudy sensorium. Pelvic and rectal examinations were not done on ad-

mission. Later a prolapse of the uterus was noted.

Examination of the blood on July 8 showed the hemoglobin to be 19.3 Gm., the red cell count 6,200,000, the white cell count 32,500, with 64 per cent segmented polymorphonuclear neutrophils, 23 per cent non-segmented polymorphonuclear neutrophils, 1 per cent eosinophils, 7 per cent lymphocytes, and 5 per cent monocytes. On July 9 the hemoglobin was 16.5 Gm., the red cell count 5,600,000, the white cell count 8,850, with essentially the same differential. By July 15 the hemoglobin had dropped to 7 Gm., the red cells to 2,500,000. On July 25 the hemoglobin was 9 Gm., the red cell count 3,650,000. The white cell count continued to range between 13,000 and 17,000.

A specimen of urine obtained on admission was grossly bloody. A stained smear revealed gram-positive cocci and gram-negative rods. There were innumerable red blood cells and white blood cells. Urinalyses consistently showed a 2- to 3-plus reaction for albumin and a specific gravity varying between 1.013 and 1.021. On July 19 and July 25 urinalyses revealed 3 to 5 red cells and an occasional white cell per high power field.

The nonprotein nitrogen on admission was 74 mg. per 100 cc.; by July 10 it had fallen to 36 mg., and thereafter it varied between 31 and 66. The total serum proteins were 5.7 Gm. per 100 cc. on July 9. The carbon dioxide combining power ranged between 43 and 85 volumes per cent. Serum chlorides varied between 512 and 568 mg. per 100 cc. A urine culture made on July 6 revealed *Escherichia coli* and an intermediate coliform bacillus. A blood culture made on July 19 was reported as being sterile. The result of the Kahn test was not reported.

An x-ray of the chest on July 10 revealed arteriosclerotic changes in the aorta and moderate cardiac enlargement without characteristic configuration.

The patient was placed immediately on penicillin, receiving 240,000 to 400,000 units daily. The temperature dropped to normal by the third hospital day, but began to rise again on the fourth day, going as high as 104 F. on the seventh day. Penicillin was stopped on the fifth hospital day. Thereafter, the temperature varied between 99.4 and 103.6 F., although there were several temperature rises as high as 105 F. Streptomy-

cin in doses of 2 Gm. daily was begun on the eighth hospital day and discontinued two days later. Penicillin was resumed on the fourteenth hospital day in a dosage of 240,000 units daily; the temperature curve showed no response, however, and penicillin was stopped after four days. It is not recorded whether the blood which was taken for culture on July 19, 1947—the day that penicillin was started the second time—was taken before or after the first dose of penicillin. In any event, the culture was sterile.

On July 7 the patient vomited coffee-ground material which was benzidine-positive. On the same day it was found that she had auricular fibrillation, with a pulse rate of 110. The point of maximal impulse was in the anterior axillary line. Blood pressure was 80 systolic, 40 diastolic. The lung bases were full of moist rales. On July 8 the patient was given 1.25 mg. of digoxin intramuscularly; the heart rhythm reverted to normal late that night. The urinary output had remained fairly good after the first few days in the hospital.

The patient remained somewhat stuporous, and again vomited blood on July 12. On July 15, after a dose of streptomycin, the patient suddenly went into shock and her blood pressure was unobtainable. There was moderate muscular rigidity with some twitching. At this time the hemoglobin was 7 Gm. Enema returns had been black, and it was thought that the patient must be having massive gastrointestinal hemorrhages. She again vomited blood on July 16. Several small blood transfusions were given. On July 19 she became comatose and was unable to take nourishment by mouth; fluids were given parenterally. On July 24 moderate palpebral edema and edema of the legs began to develop. On July 28 her temperature went to 106.2 F. rectally; the radial pulse and blood pressure were not obtainable, and the patient died at 8:25 a.m.

Discussion

DR. GEORGE T. HARRELL: In summary, this is the story of an acute fatal illness of twenty-three days' duration in a 72-year-old woman. It was characterized by fever, chills, pain in the costovertebral angles, burning and frequency of urination, and the passage of blood clots in the urine. It would be helpful to know whether this was an acute exacerbation of a pre-existing disease and

whether there had been weight loss or a gradual down-hill course.

The past history suggested a bleeding ulcer ten years previously, but there is no mention of any subsequent symptoms. Recurrent attacks of pyelitis and pyelonephritis are described, but we are not told when the last attack occurred. This information casts little light on the present illness. No marital history is recorded, but since a prolapse of the uterus is described the patient probably had had children. One wonders if the prolapse might have been due to the birth of an unusually large child, such as patients with diabetes are apt to have.

The physical examination showed hypotension, mental confusion, and a hot, dry and pale skin—a finding which one would not expect in view of the laboratory data. No evidence of weight loss is mentioned. The pupils reacted poorly, and white areas were found in the fundi. A more detailed description of these lesions—whether they appeared to be old scars, whether they were smooth, round, and raised as a tubercle might be, whether they were small or large, and whether they bore any relation to the blood vessels—would be valuable. We do know that they had no surrounding hemorrhage. The rales heard in the lungs on admission progressed to frank congestion; atelectatic rales are not uncommon in acutely ill elderly patients who are confined to bed. The heart was enlarged to percussion, and auscultation revealed extrasystoles and a systolic murmur at the apex; fibrillation and frank congestive failure developed later. The abdomen was tender, but there was no loss of peristalsis and no masses were present. The costovertebral angles were tender, the left more so than the right. A prolapse of the uterus was noted, but no ulceration or bleeding from the cervix is described.

The fever responded to the administration of penicillin for three days, but recurred while the patient was still on the drug. We are told that she vomited coffee-ground material and blood, but the quantity and color of the blood are not described. If the patient was not taking iron, the black stools probably resulted from the digestion of blood entering the upper intestinal tract. The development of auricular fibrillation and congestive failure was accompanied by rales in the lungs and edema of the legs; the edema

of the eyelids which was described does not ordinarily occur with congestive heart failure. The patient continued to be stuporous, but suddenly went into shock accompanied by rigidity of the muscles and twitching. She died in coma with a high temperature. This course suggests a rapidly progressing acute infection, though it is difficult to fit all of the findings into a single diagnosis.

Anatomically one would expect bilateral lesions in the kidneys, most marked on the left⁽¹⁾. Nephritis can be ruled out on the basis of the blood pressure, the findings in the eyegrounds, and the nonprotein nitrogen. Polycystic disease of the kidney—a cause of massive hemorrhage—usually occurs in the fourth or fifth decade and is accompanied by signs of uremia.

There is evidence of disease of the mucosal surface of the upper gastrointestinal tract, probably in the stomach or duodenum, but no evidence of involvement of the peritoneal surface.

The central nervous system is involved, but the neurologic signs do not allow localization of a specific lesion; the involvement was probably diffuse and on a toxic basis, though a terminal cerebral accident must be kept in mind. A lumbar puncture would have shed light on this possibility.

Disease of the circulatory system was evidenced by a disturbance of rhythm resulting in myocardial failure. An anatomic lesion is rarely demonstrated in cases of myocardial failure resulting from disturbances of rhythm. The systolic murmur in the presence of high fever would suggest an acute bacterial endocarditis, but the absence of petechiae, a palpable spleen, a changing quality to the murmur, or positive blood cultures does not support this diagnosis. The systolic murmur in the presence of cardiac failure may have been due to dilatation. The persistent peripheral vascular collapse suggests the possibility of bilateral adrenal cortical involvement.

The diagnosis of a blood dyscrasia involving the bone marrow or lymphoid tissue is not justified by the physical and laboratory findings.

Etiologically gross hematuria most frequently results from infection—usually tuberculous—or from malignancy. Gram-neg-

ative bacilli and gram-positive cocci were stained in the urinary sediment, though only *Escherichia coli* were grown on culture. Acid-fast stains of the urine are not described; no lesions which would support an impression of tuberculosis are described in the chest x-ray. The single blood culture was taken late in the course of the disease, and after the initiation of penicillin therapy; either of the urinary organisms might be inhibited by the antibiotic and not grow out in the blood culture.

The clinical response to penicillin and the marked improvement in the findings in the urinary sediment would suggest that the organisms discovered in the urine responded to therapy. Whether these were primary or secondary invaders is difficult to say. The fact that the infection did not remain under control would suggest that they were secondary invaders and not the primary cause of the disease. Invasion from an infection outside the urinary tract is not supported by the physical or laboratory findings, however. The primary invader did not appear to respond to streptomycin, though the quantity given was inadequate to achieve a therapeutic response if the infection was due to the tubercle bacillus.

An infection which does not show the expected response to therapy suggests the possibility of a metabolic disturbance interfering with the immune response. Diabetes is known to aggravate infections with the tubercle bacillus and staphylococcus, and to predispose the patient to urinary tract infections. A very slight suspicion of the presence of diabetes might arise from the prolapsed uterus, as well as from the marked dehydration noted on admission. It would be interesting to know whether there was any history of boils or excoriations of the vulva, what the blood sugar was, and whether sugar was found in the urine.

The most common malignancy resulting in hematuria is carcinoma of the kidney. Hypernephroma may also cause gross hematuria and high fever, even in the absence of metastases. The bilateral symptoms would seem to weigh heavily against a malignancy, since primary tumors of the kidney are almost always unilateral. If cystoscopy had been possible, it would have shown whether the bleeding was actually bilateral; unilateral bleeding would be much more suggestive

1. (a) Cahill, G. F.: Hematuria: Its Clinical Significance. *J. Urol.* 17:221-231 (March) 1912; (b) Gomberg, D.: Hematuria. *North Carolina M. J.* 7:213-215 (May) 1916.

of tumor. Hypernephroma would be likely to cause metastases of the lungs, but no "golf ball" lesions are described in the lung fields. Malignant metastases to the mucosal surface of the stomach are very rare.

It is a moot point whether chronic peptic ulcer of long duration will become malignant. In any event, metastases to the kidney from a carcinoma of the upper gastrointestinal tract, without other evidence of metastases, would be very rare. Carcinoma of the uterus, which is common in women who have borne children, is not supported by the description of the prolapsed uterus. Carcinoma of the breast—one of the most common sites of malignancy in women—is not supported by the physical examination or by laboratory evidence of metastases. A very tiny primary lesion in the breast, however, may cause widespread miliary metastases, producing the picture of septicemia with high fever and bleeding from involvement of the bone marrow.

Physiologically the disease produced marked dehydration, as is shown by the hemoglobin and the red and white blood cell counts, which were unusually high in spite of the pallor. It is difficult to estimate the degree of dehydration without knowing the amount of fluids given and the urine volumes in the first few days, as well as the hematocrit values. The hemoglobin dropped to 7 Gm. and the red cell count to 2,500,000, but it is impossible to tell how much of this fall was due to hydration and how much to bleeding. The fact that the nonprotein nitrogen dropped from 74 to 36 mg. per 100 cc. with hydration seems to rule out nephritis; the subsequent rise to 66 mg. per 100 cc. could be due to low filtration pressure from chronic circulatory failure, or to bleeding into the gastrointestinal tract.

The laboratory findings do not suggest that interference with the clotting mechanism was the basis for the blood loss, though there is no mention of abnormal cells, a platelet count, a prothrombin determination, or a tourniquet test.

Though the total serum proteins are listed as 5.7 Gm. per 100 cc., the persistent finding of a 2- to 3-plus reaction for albumin in the urine and the development of palpebral edema would suggest a mild hypoproteinemia late in the course of the disease. If the carbon dioxide combining power of 43 volumes

per cent were found after the administration of fluid, a preceding acidosis might be suspected and would lend a little support to the suspicion of diabetes. The rise to 86 volumes per cent after vomiting would suggest the loss of free hydrochloric acid from the stomach with resultant alkalosis; the presence of such a degree of hydrochloric acid would favor a benign rather than a malignant ulceration in the upper gastrointestinal tract. The low blood chloride level is further evidence of dehydration and acidosis such as might occur in diabetes.

The differential diagnosis appears to rest between tuberculosis of the kidney, with terminal miliary spread, and carcinoma of the kidney. The apparent absence of symptoms before the fatal illness seems to indicate that the gastrointestinal bleeding was not connected with the primary disease process and arose from some site other than the old peptic ulcer⁽²⁾.

Dr. Harvell's diagnoses

1. Miliary tuberculosis with invasion of the kidneys and adrenals, and cerebral involvement, in a patient with mild diabetes; or, as an alternate diagnosis, carcinoma of the kidney, with the breast as the second most likely primary site.

2. Chronic pyelonephritis, mixed flora.

3. Chronic duodenal ulcer, inactive, with bleeding from some other site in the gastrointestinal tract.

DR. FRED K. GARVEY (*Urologist*): Massive hematuria without previous signs or symptoms is most often thought to be from neoplasm. Identical bleeding may occur with calculus, tuberculosis, trauma, and even simple urinary infection, but usually the history in such cases points more specifically toward one of the latter diseases. Renal tumors are more apt to cause massive hemorrhage than is tuberculosis or calculi, but the latter conditions, since they are much more common than tumor, are responsible for more cases of massive hematuria. In the event of gross hematuria without bladder symptoms, the decision as to whether the lesion is in the upper or lower urinary tract depends considerably on the presence or absence of pain referable to the upper urinary tract.

Occasionally worm-like clots of blood,

2. (a) Jankelson, I. R. and Segal, M. S.: Massive Hemorrhage from Peptic Ulcer, *New England J. Med.* 219:3-5 (July 7) 1938; (b) Jankelson, I. R.: Massive Hematemesis of Undetermined Origin, *Gastroenterol.* 5:96-101 (Aug.) 1915.

which are casts from the ureter, will be found in the urine. Such clots are pathognomonic of bleeding from the upper urinary tract, and quite commonly produce pain or mild colic.

Bilateral flank pain with gross hematuria usually suggests bilateral involvement, and would cause one to suspect the more common diseases such as calculi or simple inflammation rather than renal tumor, which rarely is bilateral. On the other hand, however, it is possible for pain in one kidney to produce, by crossed renal reflex, some degree of pain in the opposite organ.

In a patient of this age, without a previous history of stones or tuberculosis, a renal neoplasm must be strongly considered. The pain in the involved kidney could be explained by clots blocking the ureter, and the pain in the opposite side could be due to a crossed renal reflex or to pyelonephritis. The latter mechanism is suggested by the pyrexia which this patient had.

DR. MACDONALD FULTON (*Bacteriologist*): The direct smears of urine sediment showed gram-positive cocci and gram-negative bacilli, but on culture only the bacilli grew. It is possible that the culture medium chosen was one which would grow the gram-negative bacilli, but would tend to inhibit the cocci. Media commonly used to grow coliform bacilli inhibit or greatly retard the growth of most cocci. This fact should be taken into account in deciding what media to employ in making urine cultures. It is important in choosing therapy to know whether a urinary infection is pure or mixed bacteriologically.

DR. DAVID CAYER (*Internist*): In view of this patient's extremely critical condition throughout her hospitalization, no accessory studies could be attempted to demonstrate the actual site of the gastrointestinal bleeding. Clinically, however, it appeared to be from the upper gastrointestinal tract. On a statistical basis, peptic ulceration would be most likely, even in a patient of this age. The demonstration of free hydrochloric acid in the aspirated material, as well as the past history of ulcer, would also be in favor of this diagnosis. Carcinoma of the stomach should not be overlooked, however, and it is possible for both ulcer and cancer to occur in the same patient over a period of years. The possibility of malignant change in a pre-existing benign ulcer is unlikely. Most

internists feel that benign peptic ulcerations rarely become malignant, and that the mortality from cancer of the stomach among patients with ulcer is less than that among the general population.

I agree with Dr. Harrell that a metastatic lesion from the kidney to the mucosa of the gastrointestinal tract is most unlikely.

DR. WILLIAM WOLFF (*Clinical Chemist*): The high nonprotein nitrogen noted on admission probably represents dehydration with nitrogen retention which cleared up as the fluid balance came back to normal. The subsequent rises in the nonprotein nitrogen may well have been the result of massive hemorrhages into the gastrointestinal tract. Recent reports in the literature suggest that a rise in nonprotein nitrogen may be expected following the introduction of 500 to 800 cc. of blood into the intestinal tract.

Anatomic Discussion

DR. W. C. THOMAS: The principal findings at the postmortem examination were in the heart, esophagus, and left kidney. The annulus fibrosus of the mitral valve of the heart showed thickening and calcification⁽³⁾. A large, friable vegetation was noted on the mitral valve. Cultures of the vegetation and of the blood revealed a pure growth of *Esch. coli*. Gram-stained sections of the vegetation showed gram-negative, rod-shaped organisms. Embolic phenomena were present in the spleen, kidneys, skin and conjunctivae⁽⁴⁾.

The distal half of the esophagus was noted to be thickened and the mucosa was ulcerated⁽⁵⁾. The microscopic sections showed subacute and acute inflammation.

A light gray, well vascularized, circumscribed mass 5 cm. in diameter occupied the upper pole of the left kidney⁽⁶⁾. No metastases were found in the other tissues of the body.

Anatomic Diagnoses

1. *Calcification of the mitral annulus fibrosus.*
2. *Acute bacterial endocarditis, mitral*

3. Rydand, D. A. and Lipsitch, L. S.: Clinical Aspects of Calcification of the Mitral Annulus Fibrosus. *Arch. Int. Med.* 78:544-564 (Nov.) 1946.
4. Zeman, F. D. and Siegal, S.: Acute Bacterial Endocarditis in the Aged. *Am. Heart J.* 29:597-610 (May) 1945.
5. Friedenwald J., Feldman, M. and Zinn, W. F.: Peptic Ulcer of the Esophagus. *Am. J. M. Sc.* 177:1-14 (Jan.) 1929.
6. Creevy, C. D.: Confusing Clinical Manifestations of Malignant Renal Neoplasms. *Arch. Int. Med.* 55:895-916 (June) 1935.

valve, due to *Esch. coli*, with infarctions of spleen and kidneys, petechiae of skin and conjunctivae, acute hepatitis, and acute splenitis.

3. *Ulcerations of the esophagus*, with acute and subacute inflammation.

4. *Carcinoma of the kidney*, left, with ulceration of the mucosa of the renal pelvis.

Closing Discussion

DR. HARRELL: This case teaches two lessons: (1) the value of relatively simple bacteriologic studies, and (2) the inadvisability of attempting to analyze minutely a poor history. In the absence of an accurate detailed history it may be wiser to assume as a working diagnosis that the lesion most probable on a statistical basis is present. In this case unquestionably it would have been carcinoma of the kidney, because of the patient's age and the sudden onset of urologic symptoms with bleeding.

Repeated early blood cultures should certainly have found the colon bacillus and could have led to the correct interpretation of the heart murmur as due to acute bacterial endocarditis. This finding would have been important in planning therapy; it might have made it possible to improve the patient's condition sufficiently to allow additional diagnostic studies which would have resulted in operative attack on the primary disease process. The absence of demonstrable metastases would lead one to believe that a good operative result might have been obtained.

The ulceration in the esophagus brings to mind the danger of long continued use of an indwelling stomach tube.

VITAL STATISTICS FOR 1946

The year 1946 marks a new record low for the crude death rate in the United States, according to figures of the National Office of Vital Statistics. The death rate for the year was 10.0 per 1,000 population as compared with the rate of 10.6 for 1945 and the previous lowest rate of 10.4 in 1942. The total number of deaths in 1946 was 1,395,617—6,102 fewer than in 1945.

The estimated death rate for the United States in 1947, based on data for the first ten months of the year, was 10.1.

The five leading causes of death in the United States in 1946 in rank order were diseases of the heart, cancer, intracranial lesions of vascular origin, nephritis, and accidents other than motor vehicle accidents. This is the first year in which pneumonia and influenza (combined) were not represented among the five leading causes of death.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

WORKMEN'S COMPENSATION ACT: An injured employee is awarded compensation if the injury occurs by accident, and arises out of and in the course of employment.

An employee of a publishing company sustained an injury to his back on February 3, 1947. At the time of the injury he was in the act of lifting a plate weighing 40 or 50 pounds for the purpose of passing it to the pressman. He had been doing the same type of work, as the necessity arose, over a period of two and a half months. The act consisted in bringing the plate upward to the proper height, extending the left foot forward, twisting the body slightly to the right, and placing the plate in the pressman's hands. No ill results had been felt until the date noted above. The pain came on suddenly and was excruciating. There was some reference to the employee's having had previous trouble with his back, such as weakness, pain, and "catches" at intervals.

Two days after the injury occurred the employee consulted a physician, who strapped the area and treated the case as a sprain. On March 7, 1947, he consulted another doctor, who made a diagnosis of rupture of an intervertebral disc. An operation for the relief of the condition was performed on March 14. The patient continued disabled until June 10.

At a hearing before a representative of the Industrial Commission the employee was awarded compensation. The insurance carrier and employer then appealed to the superior court, where the judgment of the Commission was affirmed. The defendants then brought the case to the Supreme Court for final disposition.

The employer and carrier urged that there was a weakness of the back existing before the acute onset, and that, while the injury occurred in the course of the employee's work, it was not due to accidental causes. The issue, therefore, when the case came to the Supreme Court, was whether inherent weakness or accident was responsible for the disability. The Court had to determine just what unusual movement of the body occurred

at the time of the injury which had not happened during the preceding two and a half months, when the employee had been performing the same act without any signs of injury.

The Supreme Court defines an "accident" within the meaning of the Workmen's Compensation Act to be "an unlooked for and untoward event, not expected or designed by the injured employee, a result produced by a fortuitous cause, or an unexpected, unforeseen, or undesigned occurrence."

Upon the basis of the facts adduced at the hearings and according to the definition of accident noted above, the court ruled that the injury was caused by accident and arose out of and in the course of the employee's work. The employee was well before he lifted the plate; during the act he was stricken by violent pain. Therefore it was assumed that the act was the causative factor in the production of the injury complained of.

In such cases as the above, the physician, as an expert witness of fact or one who gives opinion evidence only, is the only person who can furnish information acceptable for arriving at an equitable decision. Upon the basis of his knowledge of anatomy and other medical information, he should be able to outline the mechanics of physical disability so as practically to remove the solving of such problems from the realm of conjecture. In this way he would not only aid the courts but would ensure justice to claimants and employers as well. (Supreme Court of North Carolina, V. 41 S.E.R., p. 592, March, 1947)

The medical profession's role in lowering the cost of hospital care.—An important, if not the most important, factor in the development and final success of any plan conceived and adopted by hospitals for the more efficient and less costly care of sick patients will depend on the interest and cooperation of the medical profession. Who, for example, shall decide whether a patient requires special attention or not? Surely not the hospital administration alone. You, the physician, better than anybody else know the condition of each patient, and extra services to those patients (exclusive of the luxury group) must be determined not on the wishes of patients or their families but on the condition of those patients in their relation to the routine service that your hospital is able to give. Therefore, with the changing concept of what is best and most efficient for the care of our patients, let us take an active, aggressive and cooperative part in the development and execution of any constructive program that our hospitals may choose to establish.—Leland S. McKittrick: *Medical Care in Our Free Society*, New England J. Med. 236:923 (June 19) 1947.

PUBLIC RELATIONS

Editor's Note: This is the first in a series of articles to be sponsored by the Public Relations Committee of the Medical Society of the State of North Carolina. Dr. Donald Koonce of Wilmington is chairman of this committee.

THE NEED FOR BETTER PUBLIC RELATIONS

The first article in this series on public relations was to have been written by President Frank Sharpe. After his sudden and untimely death, Chairman Donald Koonce asked me to accept the assignment.

No one strove harder for better public relations than Frank Sharpe. He literally gave of himself beyond the point of physical endurance. No task was too menial or too big for his personal effort. His soul was filled with the "milk of human kindness" and a desire to serve his fellow man. It is, therefore, with great humility that I serve as his substitute. I bespeak charitable and tempered judgment of what follows.

First, what are "good public relations?" I would say that they are the efforts of organized medicine to conduct its affairs and to publicize its conduct so as to gain the confidence, respect and good will of the public.

Have our public relations, then, been good in recent years? I do not think so. In fact, I question whether they could have been much worse.

The truth of that statement is reflected in the harsh and often false criticisms hurled at us by the propagandists appearing before the Senate Committee conducting recent hearings on the Wagner-Murray-Dingell Bill. The statement was often made that there were 5,000,000 men rejected by the draft boards, the implication being that these rejections were due to remediable defects and that the medical profession had been woefully derelict in not having long before corrected them. You and I know that a large number of these rejections were for congenital defects, wholly beyond our control—for example, eye defects, mental defects, deaf-mutism, orthopedic deformities, and hernias. Add to this number the rejections for disabilities acquired by reason of accident, such as amputations and blindness, and

the number of rejections for remediable defects is not 5,000,000, but only about 1,500,000⁽¹⁾. Moreover, these rejections were made under the strictest physical requirements of any army in the world. This propaganda is only part of a planned and deliberate attack on free medicine with no holds barred⁽²⁾.

The need for good public relations on an organized basis is at once seen. We can no longer afford to ignore the challenge, regardless of the source of that challenge. Suffice it to say that it emanates from a well-organized minority with but one intent: the regimentation of medicine as the keystone of the arch of an all-powerful, dictatorial government.

Let us be completely candid with ourselves, however. All criticism does not emanate from an organized minority. There is at least one individual in any lay group of ten to fifteen people who thinks he has been overcharged by a doctor or in some other way mistreated. Just start a discussion on socialized medicine in such a group and see how quickly the sparks fly. We can no longer ignore this trend in public opinion. We must meet it with constructive effort and direction. The best defense is a positive offense.

We need, perhaps, to do a little soul-searching of ourselves individually. Are we furnishing leadership in our local communities? Could we give a little more time, thought, and money to worthy causes? Are not our responsibilities the same as any other citizen's? I know that there are many beloved and respected doctors over this state, but should there not be more such men? Have we gotten away from some of the finer traditions of medicine? Each doctor can answer these questions for himself.

Nevertheless, there is no question about the past record of American Medicine. It is one in which we can well take superlative pride. Let us, as members of organized medicine, tell it to the world! Let us fight back, secure in the strength of truth. Let us rededicate ourselves to those traditions of

medicine which have always called forth the best within us. And, lastly, let us not be afraid to introduce any innovations of practice necessary to meet modern conditions—always, however, under our leadership, direction, and control.

I believe, then, that good public relations will follow. Such men as Frank Sharpe will not have lived in vain.

V. K. HART, M.D.
Charlotte

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

January, 1948

No. 1

THERE probably never has been a period when a clear understanding of "activity" in tuberculosis was more important than now. The use of the miniature film technique by the military services and in industrial and community surveys has made the public "chest X-ray conscious." In mass X-ray surveys of apparently healthy groups, the majority of the cases of tuberculosis discovered are neither obviously active nor obviously healed but require extended study and observation to determine the presence or absence of activity.

THE DIAGNOSIS OF ACTIVITY IN PULMONARY TUBERCULOSIS

There is no single word in the vocabulary of clinical tuberculosis more widely employed nor more widely misunderstood than the word "activity." The ancient fallacy still persists that rales arise in moisture, which signifies inflammation and hence, activity. Another more dangerous fallacy is that activity is usually accompanied by slight changes in temperature, pulse, weight, appetite and physical energy.

The two essential requirements of a scientifically sound and clinically useful concept of activity are that it must be securely based on the anatomic state of the tuberculosis lesion and must also be synonymous with need for treatment. Such a concept must include three distinct groups of cases: those which show anatomic progression; those which are anatomic stationary but not healed; and those which are retrogressive but not yet safely healed.

In determining whether or not a case requires treatment, the symptoms, physical signs, laboratory data, and X-ray picture may all be used—or misused.

The symptoms of pulmonary tuberculosis are familiar to all physicians. When a group of them is present there is usually no doubt about activity. When only one or two of them are present they may be erroneously attributed to the minimal lesion shown in the X-ray film. Serial films are the only safeguard against this error.

1. See statement before the Senate Committee on Education and Labor by Dr. Harold T. Low, then president of the Association of American Physicians and Surgeons, April 18, 1946.

2. See "Our Most Dangerous Lobby" by Congressman Forest A. Harness in December number of Reader's Digest.

A more common and more serious error is to exclude activity because of the absence of symptoms. It cannot be emphasized too strongly that tuberculosis, both in its onset, and during the early period of relapse, is characteristically a symptom-free disease. To depend upon symptoms, or to await the development of symptoms, is to lose the most favorable moment for treatment. Surveys have shown that when the diagnosis is based upon symptoms, 87 per cent of the cases will have advanced disease. Increasing numbers of hospital beds are filled with patients whose symptom-free, early disease was discovered in a survey or induction examination a year or so earlier, but who refused treatment and continued to work until they felt sick and had advanced disease. The public requires education on this matter; let us hope that most of it will be forthcoming from physicians.

Physical signs are of still less value than symptoms in determining activity. Inspection, palpation, and percussion are not to be trusted and auscultation is but little better. Coarse, or moderately coarse, moist rales, do usually indicate activity. They are often absent, even in far-advanced disease. Conversely, rales of the fine, or moderately coarse, dry type are often present throughout the entire life of a person with well-healed tuberculosis.

Like symptoms and physical signs, the laboratory helps us out by confirming a suspicion of activity, but does not exclude it. The finding of tubercle bacilli in the sputum, or in the gastric contents is always an indication for treatment and careful search should never be neglected.

Blood studies as a guide to activity are of little use to the doctor in practice. Most clinicians agree that the X-ray picture is a more accurate, sensitive, and dependable barometer of intrapulmonic weather than the blood picture.

The superiority of the X-ray film over other guides to activity in pulmonary tuberculosis makes it important that we recognize its limitations and use it to the greatest advantage. It requires little experience for anyone to learn to recognize the "soft" shadows, with indistinct borders which signify the active exudative, pathological reaction, and the "hard" shadows, partly or largely linear and with sharply defined borders, which signify a well-healed fibrotic reaction. Between these two extremes is a large group of cases in which the most experienced and expert interpreter will be unable to differentiate active from inactive disease by a single film. In these cases there is no substitute for the careful and detailed comparison of serial films made at intervals of one to three months.

In making comparisons of films it is important to keep in mind certain sources of error. The degree of exposure, the depth of inspiration and position of the patient in relation to the cassette may give illusory effects if the films being compared are not carefully checked for these factors. Slight differences in projection angles or changes in the position of the clavicles may reveal shadows which were partially concealed in the earlier film, thus giving the illusion of progressive disease or vice versa.

The Diagnosis of Activity in Pulmonary Tuberculosis (with case reports and illustrative films), Raymond C. McKay, M.D., Postgraduate Medicine, May, 1947.

Schering Introduces Micropellets Progynon

Pure micro crystals of alpha estradiol, when suspended in normal saline solution provide an immediate and prolonged effect upon intramuscular injection. Consequently, to meet many requests for an aqueous estrogen of this type, Schering Corporation of Bloomfield and Union, N. J., has introduced Micropellets Progynon. In this product the water is absorbed and the Micropellets remain in the tissue with all the advantages of a pellet implantation. Freedom from the pain of injection, which is an objection to other suspensions of large crystals or bulky amorphous masses, is assured when these tiny Micropellets are employed.

Lonalac for Diets of Restricted Sodium Content

Lonalac, nutritionally similar to whole milk powder but virtually free of sodium, aids in the maintenance of protein nutrition when milk, meat, eggs and cheese must be restricted. Congestive heart failure, hypertension and toxemia of pregnancy have been treated with low sodium diets. Sodium analyses of foods, diet plans, literature on uses of low sodium diets and samples of Lonalac are available from: Mead Johnson & Co., Evansville 21, Indiana.

Dr. Gray Is Parke-Davis Medical Consultant

Announcement that Dr. J. P. Gray has joined the staff of Parke, Davis & Company in the capacity of Medical Consultant to the Sales and Promotion Division has been made by Harry J. Loynd, vice president of the company.

Dr. Gray has served as dean of the School of Medicine of the Medical College of Virginia in Richmond.

SITUATION WANTED

New York physician (general practitioner) desires to locate in North Carolina. Willing to assist or become associate. Age 32, married, veteran, licensed to practice in North Carolina.

Address "F"
Post Office Box 456
Winston-Salem, N. C.

DOCTOR WANTED

The town of Waxhaw in Union County is without a doctor. A physician locating in Waxhaw would serve between 5000 and 6000 people and would have the facilities of the hospital in Monroe, twelve miles distant, at his disposal. A registered pharmacist has agreed to come to Waxhaw if a doctor will locate there.

Anyone interested should write Mr. Robert Howie, Waxhaw, N. C.

BULLETIN BOARD

MEDICAL AND SURGICAL SYMPOSIUM OF WATTS HOSPITAL

The Fifth Annual Medical and Surgical Symposium of Watts Hospital will be held Wednesday and Thursday, February 11 and 12, 1948, in Durham, N. C.

The headquarters for the Symposium will be at the Washington Duke Hotel, where the various luncheons and dinners will be served with the exception of the annual barbecue dinner at Watts Hospital, Wednesday evening, February 11. The entire scientific program will be conducted in the Carolina Theater, which is approximately half a block from the Washington Duke Hotel. The program is as follows:

Wednesday, February 11

- 11:00 A.M.—1:00 P.M.—Clinico-Pathological Conference—Virgil H. Moon, M.D., Professor of Pathology, Jefferson Medical College, Philadelphia, Pennsylvania; and Garfield G. Duncan, M.D., Director of the Division of Medicine, Pennsylvania Hospital, and Clinical Professor of Medicine, Jefferson Medical College, Philadelphia, Pa.
- 2:30 P.M.—“The Clinical Use of Endocrines in the Management of Urogenital Tract Disease”—Reed M. Nesbit, M.D., Professor of Surgery, University Hospital, Ann Arbor, Michigan.
- 3:30 P.M.—“Recent Advances Concerning Coronary Heart Disease”—Louis N. Katz, M.D., Director of Cardiovascular Research, Michael Reese Hospital, Chicago, Illinois.
- 8:00 P.M.—“The Diagnosis of Pituitary Disease”—Lewis M. Hurxthal, M.D., Chief of the Medical Service, Lahey Clinic, Boston, Mass.
- 9:00 P.M.—“Pathogenesis and Treatment of Malignancy of the Large Bowel”—Richard B. Cattell, M.D., Surgeon-in-Chief, New England Deaconess Hospital; Surgeon, New England Baptist Hospital; Surgeon, Lahey Clinic, Boston, Mass.

Thursday, February 12

- 11:00 A.M.—1:00 P.M.—Clinico-Pathological Conference—Tracy B. Mallory, M.D., Director of the Laboratories of Pathology and Bacteriology, Massachusetts General Hospital, Boston, Massachusetts; and Conger Williams, M.D., associate of Dr. Paul White in the Cardiology Group, Massachusetts General Hospital, Boston, Massachusetts.
- 2:30 P.M.—“Anticoagulant Therapy”—Nelson W. Barker, M.D., Associate Professor of Medicine, Mayo Foundation, Rochester, Minn.
- 3:30 P.M.—“Shoulder and Arm Pain: Diagnosis and Treatment”—Ralph K. Ghormley, M.D., Professor of Orthopedic Surgery, Mayo Foundation, Rochester, Minn.
- 8:00 P.M.—“Treatment of Diabetes in Every Doctor's Practice”—Elliott P. Joslin, M.D., Professor Emeritus, Clinical Medicine, Harvard Medical School, Boston, Massachusetts.
- 9:00 P.M.—“Recent Nutritional Advances in Medicine and Surgery”—Paul R. Cannon, M.D., Professor of Pathology, University of Chicago, Chicago, Illinois.

POSTGRADUATE COURSES IN MEDICINE

Sponsored by the School of Medicine and the Extension Division of the University of North Carolina

Raleigh

- March 2: Antibiotic Therapy from the Standpoint of the General Practitioner—Dr. Chester Keefer, Boston University School of Medicine, Boston.
- March 9: Surgical Emergencies of Infants and Children—Dr. Thomas H. Lanman, Harvard Medical School, Boston.
- March 16: Differential Diagnosis of Biliary Tract Diseases—Speaker to be announced.
- March 23: Psychosomatic Medicine—Dr. Kenneth E. Appel, University of Pennsylvania School of Medicine, Philadelphia.
- March 30: Cancer; Recent Developments in Etiology and Diagnostic Methods—Dr. George Z. Williams, Medical College of Virginia, Richmond. (North Carolina Chapter of American Cancer Society, Co-Sponsor)
- April 6, 4:00 P.M.: Problems in Obstetrics from the Standpoint of the General Practitioner.
8:00 P.M.: Office Gynecology from the Standpoint of the General Practitioner
Dr. Edward A. Schumann, Philadelphia.
- April 13: Recent Advances in Etiology and Treatment of Poliomyelitis—Dr. Philip M. Stimson, College of Physicians and Surgeons, Columbia University, New York City. (National Foundation for Infantile Paralysis, Co-Sponsor)

Greensboro—High Point

- March 3, Greensboro, 4:00 P.M.: Recent Advances in Pediatric Therapy
8:00 P.M.: Chronic Malnutrition in Children
Dr. Charles F. McKhann, Western Reserve University School of Medicine, Cleveland.
- March 10, High Point: Cancer of the Breast—Dr. Charles F. Geschickter, Baltimore, Maryland. (North Carolina Chapter of American Cancer Society, Co-Sponsor)
- March 17, Greensboro: Medical and Surgical Management of Cardiovascular Disease
4:00 P.M.: Peripheral Vascular Disease
8:00 P.M.: Hypertension and Hypertensive Heart Disease
Dr. Robert W. Wilkins, Boston University School of Medicine, Boston.
- March 24, Greensboro: Psychosomatic Medicine—Dr. L. A. M. Krause, University of Maryland School of Medicine, Baltimore.
- March 31, High Point, 4:00 P.M.: Diseases of the Liver and Pancreas
8:00 P.M.: Diseases of the Stomach and Duodenum
Speaker to be announced.
- April 7, Greensboro, 4:00 P.M.: Problems in Obstetrics from the Standpoint of the General Practitioner
8:00 P.M.: Office Gynecology from the Standpoint of the General Practitioner
Dr. Edward A. Schumann, Philadelphia.
- April 13, Greensboro: Recent Advances in Etiology and Treatment of Poliomyelitis—Dr. Philip M. Stimson, College of Physicians and Surgeons, Columbia University, New York City. (National Foundation for Infantile Paralysis, Co-Sponsor)
- Addition to Lumberton Program (This program was announced in the December issue of the *Journal*)
February 25: Management of Functional Disorders in Women—Dr. Emil Novak, University of Maryland, Johns Hopkins University, Baltimore.

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

Course in Medical Mycology

A month's course in medical mycology, under the direction of Dr. Norman F. Conant, is to be offered at the Duke University School of Medicine and Duke Hospital, June 28-July 30, 1948. The course will be offered every day in the week, except Sunday, and has been designed to ensure a working knowledge of the human pathogenic fungi within the time allotted.

Emphasis will be placed on the practical aspects of the laboratory as an aid in helping to establish a diagnosis of fungus infection. Insofar as possible and as patients become available, methods of collecting materials in the clinic for study and culture will be stressed. Work with patients, clinical material, cultures, and laboratory animals will serve as the basis for this course. An opportunity to study pathologic material, gross and microscopic, will be given those whose previous training would allow them to obtain the greatest benefit from a study of such material.

The number of applicants for the course will be limited and the applications will be considered in the order in which they are received. An attempt will be made, however, to select students on the basis of their previous training and their stated need for this type of work.

A fee of \$50.00 will be charged for this course, upon the completion of which a suitable certificate will be awarded. Inquiries should be directed to Dr. Norman F. Conant, Duke University School of Medicine, Durham, N. C.

* * * *

Dr. Norman F. Conant, professor of medical mycology, Duke University School of Medicine, has been appointed as a special consultant to the United States Public Health Service as a member of the Bacteriology Study Section. The appointment covers the five-year period from January 1, 1948, to December 31, 1952.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Raymond V. Postlethwait assumed his duties as instructor in surgery on January 1, 1948.

* * * *

Dr. Harold D. Green, professor of physiology and pharmacology and director of the department, and Dr. J. Maxwell Little, associate professor of physiology and pharmacology, attended the joint meeting of the American Federation for Clinical Research and the Southern Society for Clinical Research in New Orleans on January 26 and 27. Dr. Green presented a paper entitled "Relationship between Arterial Pressure and Renal Blood Flow." The research work for this paper was carried out by Drs. Green, Ben C. Ogle, J. Maxwell Little, Woodrow Batten, Carlos Rapela, and J. Roy Hege, Jr., and was supported by a grant from the Life Insurance Medical Research Fund. The title of the paper to be presented by Dr. Little is "The Effect of Oral Streptomycin and Phthalylsulfathiazole on Blood Phenol Concentrations and Survival in Experimental Uremia."

Dr. Postlethwait and Dr. George T. Harrell, professor of medicine and director of the Department of Internal Medicine, conducted a medical and surgical seminar at the Kings Mountain Memorial Hospital, Bristol, Tennessee, on January 7 and 8. Dr. Harrell also spoke at the dinner meeting which was held in conjunction with the regular meeting of the Sullivan-Johnson County Medical Society. His subject was "Antibiotics."

* * * *

Dr. Wingate M. Johnson, professor of clinical medicine, spoke on the subject, "Upholding the Prestige of the General Practitioner," at the Grass Roots Conference of County Medical Society Officers, held in conjunction with the interim meeting of the American Medical Association in Cleveland, January 6.

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Dr. Medford Bowman, Dr. Felda Hightower, and Dr. Robert T. Odom have recently been certified by the American Board of Surgery.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE

The North Carolina Pathology Society held its fall meeting at the School of Medicine, University of North Carolina, on December 5, 1947. The afternoon session was devoted to a seminar dealing with diagnostic problems in histopathology. Dr. K. M. Brinkhous served as moderator. Officers for the coming year were elected as follows: Dr. B. Black-Schaffer, Durham, President; Dr. H. C. Lennon, Greensboro, vice president; Dr. J. C. Reece, Morganton, secretary-treasurer. Dr. Paul Kimmelstiel is the retiring president.

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Dr. K. M. Brinkhous, professor of pathology at the University of North Carolina, has been appointed special consultant in hematology to the U.S. Public Health Service. Dr. Brinkhous will be a member of the Hematology Study Section, which acts in an advisory capacity in connection with federally supported research projects dealing with studies on the blood.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA SCHOOL OF PUBLIC HEALTH

Dr. John J. Wright, professor of public health administration, and Dr. Cecil G. Sheps, assistant professor of public health administration, took part in the conferences of health officers on venereal disease control which were held in December. Dr. Wright addressed the conference of health officers from the eastern part of the state in Durham on December 4, and Dr. Sheps read a paper at the conference of health officers from the western part of the state at Charlotte on December 10.

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Dr. E. G. McGavran, dean of the School of Public Health, presented a paper on communicable disease control at the meeting of the Mississippi Public Health Association in Jackson, Mississippi, on December 10. Dr. McGavran also conducted a survey of health facilities in Evansville, Indiana, for a two-week period which began December 27.

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Dr. Bernard Riedel, instructor in parasitology, attended the meeting of the Society of American Parasitologists which was held in Chicago, Illinois, December 29-31.

TENTH DISTRICT MEDICAL SOCIETY

The fall meeting of the Tenth District Medical Society was held in Hendersonville on December 10, Dr. B. O. Edwards of Asheville presiding. Doctors participating on the afternoon program were Dr. J. L. Reeves of Canton; Drs. B. O. Edwards, L. E. Metcalf, Lillie C. Walker, C. A. Hensley, W. M. Russell, W. I. Pendleton, and F. S. Sluder of Asheville; Dr. F. H. Corpening of Hendersonville; Dr. George F. Bond of Chimney Rock; Dr. John Z. Preston of Tryon; and Dr. George Rowe of Marion. Dr. J. Warren White of Greenville, South Carolina, was guest speaker at the dinner meeting.

Dr. D. M. McIntosh of Old Fort and Marion is counselor for the Tenth District. Officers of the society for 1947 were Dr. B. O. Edwards of Asheville, president; Dr. F. O. Trotter of Hendersonville, first vice president; Dr. Harry Miller of Murphy, second vice president; Dr. A. E. Gouge of Bakersville, third vice president; Dr. Harry Ditmore of Marshall, fourth vice president; and Dr. D. M. McIntosh, Jr., of Marion, secretary-treasurer.

CATAWBA VALLEY MEDICAL SOCIETY

Dr. L. A. Crowell, Jr., of Lincolnton, was elected president of the Catawba Valley Medical Society at its meeting in Lenoir on December 9. He succeeds Dr. L. M. Caldwell of Newton. Dr. E. H. Ellinwood of Hickory was re-elected secretary-treasurer, and Dr. Charles Kendrick of Lenoir was named vice president. Dr. L. N. Glenn of Gastonia was given an honorary membership in the society, and Dr. Julius J. Gibbons of Lenoir was received as a new member.

Guest speaker for the meeting was Dr. George T. Harrell of Winston-Salem.

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Dr. P. P. Poole of Rocky Mount gave a talk on "The Management of Congestive Heart Failure" at the December meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on December 10. Officers elected for the coming year were Dr. C. W. Bailey of Rocky Mount, president; Dr. W. K. McDowell of Tarboro, first vice president; Dr. O. E. Bell of Rocky Mount, secretary-treasurer; and Dr. S. H. Justa of Rocky Mount, editor. Members of the board of censors are Drs. W. E. Wall, C. T. Smith, and J. G. Raby. Drs. A. L. Daughtridge and C. W. Bailey were elected delegates to the State Society, with Drs. J. H. Cutchin and W. S. Wall as alternates.

FORSYTH COUNTY MEDICAL SOCIETY

Dr. H. Stuart Willis, superintendent and medical director of the North Carolina State Sanatoria, spoke on "Recent Advances in Tuberculosis Control" at the meeting of the Forsyth County Medical Society held in Winston-Salem on January 13.

Officers elected for the coming year were Dr. O. J. Hart, president; Dr. John R. Bender, first vice president; Dr. Charles M. Norfleet, Jr., second vice president; Dr. Charles H. Reid, secretary; and Dr. F. G. Pegg, treasurer.

HALIFAX COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Halifax County Medical Society was held in Roanoke Rapids on December 12. A paper on "Treatment of Obesity" and case reports were given by Dr. J. H. Cutchin,

Jr., Dr. F. G. Kroncke, and Dr. Farley. Officers elected for 1948 were Dr. F. G. Kroncke, Roanoke Rapids, president; Dr. E. B. Smith, Enfield, vice president; and Dr. M. S. Broun of Roanoke Rapids, secretary-treasurer.

IREDELL-ALEXANDER COUNTIES MEDICAL SOCIETY

Dr. J. L. Pressly of Statesville was elected president and Dr. Ernest Ward of Statesville secretary of the Iredell-Alexander Counties Medical Society at its December meeting. They succeed Dr. C. L. Bittinger and Dr. L. B. Skeen, both of Mooresville. Drs. James W. Davis and Ross S. McElwee of Statesville were elected delegates to the State Medical Society, with Drs. J. S. Holbrook and Ernest Ward, also of Statesville, as alternates.

LEE COUNTY MEDICAL SOCIETY

Officers of the Lee County Medical Society for 1948 are Dr. Mary Margaret McLeod of Sanford, president, succeeding Dr. A. A. James, Jr.; Dr. John Dotterer of Sanford, vice president; and Dr. Waylon Blue of Jonesboro, secretary-treasurer.

NEWS NOTES

Dr. Verne S. Caviness and Dr. William A. Withers of Raleigh have announced the removal of their office to 109 North Boylan Avenue.

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Dr. R. B. C. Franklin, a native of Canada and formerly health officer in Surry County, will serve as health officer of Wilson County beginning February 1. Dr. Franklin is a graduate of Queens University in Ontario. During the war he served with the Army Medical Corps and the Office of Strategic Services. He received a Bronze Star for meritorious military service.

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Dr. Paul W. Johnson of Winston-Salem has announced the reopening of his office, 824 Nissen Building, for the practice of endocrinology and gynecology.

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Dr. Cristopher Johnston has announced the opening of offices for the practice of internal medicine and electrocardiography at 503 Chestnut Street, Wilmington. Dr. Johnston was formerly associated with the Duke University School of Medicine.

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Dr. Charles C. Haskell of Richmond, Virginia, president and founder of Charles C. Haskell & Co., Inc., died last month. The firm announces that it will continue in business with the same personnel.

AMERICAN COLLEGE OF PHYSICIANS RESEARCH FELLOWSHIPS IN MEDICINE

Six research fellowships in medicine have been awarded by the American College of Physicians for the year which begins in July, 1948. One of these went to Dr. Samuel P. Martin of Durham, now resident in medicine at Duke Hospital, for studies of bacterial metabolism in the Rockefeller Institute for Medical Research, New York. Another went to Dr. Peritz Scheinberg of Miami, Florida, now assistant resident in medicine at Duke Hospital, for investigation of cerebral circulation and peripheral vascular flow in normal and hypertensive persons. This investigation will be conducted at Duke Hospital under the direction of Dr. Eugene A. Stead.

NATIONAL CANCER INSTITUTE

A million and a half dollars—the largest grant of Public Health Service funds ever to be given at one time—was awarded in December to a total of sixty-four colleges, research laboratories, and public health institutions throughout the country by the National Advisory Cancer Council of the National Cancer Institute, in Bethesda, Maryland.

The Duke University School of Medicine received an award of \$24,948 for the development of a teaching program in neoplastic disease.

NATIONAL CONFERENCE ON MEDICAL SERVICE

Chicago again plays host to the National Conference on Medical Service on Sunday, February 8. President Creighton Barker, of New Haven, Connecticut, will open the 1948 session in the Red Lacquer Room of the Palmer House at 9:30 a.m. Among those participating on the program is Dr. Wingate Johnson of Winston-Salem.

THE AMERICAN FOUNDATION FOR TROPICAL MEDICINE

The fifth annual presentation of the Richard P. Strong medal for outstanding service in the field of tropical medicine was made to Dr. Neil P. Macphail, veteran surgeon and sanitarian of the United Fruit Company at Quirigua, Guatemala, at the annual dinner of the American Foundation for Tropical Medicine at the Waldorf-Astoria in New York on January 8.

Dr. Thomas T. Mackie of Winston-Salem, president of the Foundation, served as toastmaster.

AMERICAN STUDENT HEALTH ASSOCIATION

The next meeting of the American Student Health Association will be held in Detroit, May 7 and 8.

Dr. Ruth M. Collings of the Woman's College of the University of North Carolina is vice president of the association.

INTERNATIONAL POLIOMYELITIS CONFERENCE

The National Foundation for Infantile Paralysis will sponsor the First International Poliomyelitis Conference at the Waldorf-Astoria Hotel in New York next July 12 to 17.

The Department of State has been requested to transmit invitations to more than 60 foreign governments to send official delegates to the conference. These officials will be asked to present summarizations of the problems of poliomyelitis in their countries at a special session.

The program will include scientific and technical papers on research and treatment of poliomyelitis to be presented by professional authorities in the field from this country and abroad. In addition, there will be panel discussions on the various subjects.

INDUSTRIAL CONFERENCE ON ALCOHOLISM

The first Industrial Conference on Alcoholism will be held in the Morrison Hotel, Chicago, on Tuesday, March 23, 1948.

Sponsored by the Chicago Committee on Alcoholism, the conference has been designed to bring to the attention of industry leaders throughout the country facts pertaining to the problem of alcoholic employees and to discuss ways and means of overcoming the problem.

Reservations for attending the technical sessions and the luncheon may be made by writing Walter O. Cromwell, Vice President, Chicago Committee on Alcoholism, 816 South Halsted Street, Chicago 7, Illinois.

(BULLETIN BOARD CONTINUED ON PAGE 60)



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AUXILIARY

The purpose of the Public Relations Department is the building of a firmer relationship between the medical profession and the public. To accomplish this purpose, our Auxiliary must provide the forceful leadership that is needed to extend to the public at large the aims and ideals, and the health programs, instituted by the American Medical Association. The plan in progress now is singularly adapted to the needs of our own state, and we are cooperating with the Medical Society of the State of North Carolina to develop an adequate medical care program.

The campaign for recruiting student nurses is regarded as a community problem of first importance, and we are aiding in the immediate objective of increasing student enrollment by increasing interest in the nursing profession. One feature of this campaign was the speaking tour of Miss Alice Geraldine Maxwell, "Miss North Carolina Student Nurse of 1947." Miss Maxwell visited nine of the larger cities in the state, and in each of these cities was entertained at an informal tea by the local county auxiliary. Members of the nursing profession and interested high school students and graduates were invited to meet Miss Maxwell and talk over their chosen career.

Other divisions of the medical care program—(1) the promotion of health education, (2) the nutrition program, (3) the program to fight cancer, and (4) the study of prepaid medical care—will require our continuous cooperation. The Public Relations Department will endeavor to bring these health projects to the attention of practically every adult in the state through every possible avenue of approach.

Every community presents many opportunities for leadership in health projects. Throughout the year we have health drives, such as cancer, tuberculosis, and crippled-child relief. All these should be our major concern. The governing boards of associations sponsoring these objectives should have wives of physicians among their members. The Parent-Teachers' Association health chairman needs our assistance and suggestions as she plans her health program. The wife of a physician could serve in no better

place than as a Red Cross Chairman, or as a member of the City Health Committee.

Finally, the families of physicians must acknowledge their responsibility to guide and sustain the public relations campaigns designed by our medical leaders.

MRS. MILTON S. CLARK,
Goldsboro
Public Relations Chairman

BOOK REVIEWS

Curare, Its History, Nature, and Clinical Use. By A. R. McIntyre, Ph.D., M.D., Professor of Physiology and Pharmacology, College of Medicine, The University of Nebraska. 240 pages. Price, \$5.00. Chicago: University of Chicago Press, 1947.

It is probable that no drug which, according to present-day standards, has therapeutic value possesses a history more abounding in mysticism and romance than curare. The first written accounts of this Indian arrow poison appeared in the latter part of the fifteenth century, and the consternation and awe produced by it in these early Spanish explorers and adventurers are obvious in the quotations translated by the author from the earliest available sources. Dr. McIntyre is to be commended for his scholarly labors in bringing to the reader many fascinating accounts of the early history of curare, and the inevitable legends which arose concerning this mysterious lethal substance.

It was not until the middle of the nineteenth century that curare was given serious consideration as a therapeutic agent. During this time there were reports of its use in tetanus, epilepsy, hydrophobia, and chorea. The drug did not gain wide acceptance, however; its effects were too unpredictable because of the fact that the crude preparations available differed so widely in their potencies.

A standardized preparation of curare alkaloids and one pure alkaloid, d-tubocurarine, have become available in the past few years, and there has been renewed interest in the therapeutic possibilities of this drug. The use of curare to protect patients from injury during shock therapy and as an adjuvant to anesthesia is now well established. Its value in controlling the convulsions of tetanus has been shown although it has not been proved that the mortality from tetanus is reduced by the drug. Its usefulness in chronic spastic states has been investigated.

In this monograph the reader will find a most complete discussion of the history, chemistry, pharmacology, and clinical use of both crude and purified preparations of curare. The many quotations, especially those from sources not readily available, and the extensive bibliography are invaluable to one interested in the subject. Dr. McIntyre writes with the authority of one who has done investigative work on the subject, and he writes in a manner which is quite refreshing.

Anyone who is interested in the borderlands of modern therapeutics or in pharmacology or physiology, will find in this monograph a fascinating account of our knowledge of curare. If, in addition, the reader is appreciative of a scholarly approach to a subject, he will find here much that will please him.

Symptoms and Signs in Clinical Medicine

By E. Noble Chamberlain, M.D., M.Sc., F.R.C.P.; Lecturer in Medicine, University of Liverpool. Ed. 4. 463 pages, with 346 illustrations, 19 in color. Price, \$8.00. Baltimore and London: Williams and Wilkins, 1947.

This represents the fourth edition of a book first published in 1936. Many sections have been revised, particularly the chapters on the nervous system which now form almost a fourth of the present volume.

The author and his collaborators attempt to integrate for the student signs and symptoms with differential diagnosis. Unfortunately they often seem to expect their readers to have had some previous clinical background.

Each chapter begins with a discussion of symptoms referable to the system being discussed and proceeds to a discussion of normal and abnormal findings, often mixing the two with considerable repetition. While there is a chapter on "Clinical Pathology and Biochemistry" bits of laboratory information and examinations are scattered throughout the book; for example, the special characteristics of various types of sputum are included in the chapter on respiratory disease and are placed in the discussion of symptoms.

Often, as in the section on "Medical Operations and Instrumental Investigation," the attempts to be inclusive have resulted in marked inadequacies. Such sections will be of little value in enabling the reader to carry out the procedures described.

This book is not recommended as a student text for physical diagnosis. It might be of value to students or practitioners interested in a brief review of the subject.

Paravertebral Block in Diagnosis, Prognosis and Therapy.

By Felix Mandl, Professor of Surgery, Hadassah University Hospital, Jerusalem. Translated by Gertrude Kallner, M.D. 330 pages. Price, \$6.50. New York: Grune & Stratton, Inc., 1947.

This monograph on paravertebral block is divided into two parts. In the first part the author discusses the anatomy, technique, object and theory of the method. In part two, the use of the technique in differential diagnosis and therapy of abdominal disorders, cardiovascular diseases, and disorders of the extremities is discussed.

One can scarcely agree with all of the author's opinions and conclusions regarding the uses of paravertebral block, particularly as applied to the differential diagnosis and treatment of various types of abdominal pain.

The style of the text has doubtless suffered some in the translation, and the author is at times overly enthusiastic or unjustifiably dogmatic. Nevertheless, the volume impresses the reader as the author's honest appraisal of a technique whose value and place in medicine are poorly defined because it has been so widely used in treating conditions which are poorly defined.

It is opportune that this volume should appear at a time when Etamon and Priscol are being introduced. It will be most interesting to observe the effects which use of these drugs will have on the concepts discussed in this book.

The book should prove valuable to a wide variety of physicians, because paravertebral block is potentially useful in such a wide variety of disorders extending into almost all specialties in medicine.

Rypins' Medical Licensure Examinations.

Edited by Walter L. Bierring, M.D., F.A.C.P., M.R.C.P., Edin. (Hon.), secretary, Federation of State Medical Boards of the United States. Ed. 6. 690 pages. Price, \$6.00. Philadelphia: J. B. Lippincott Co., 1947.

This book is a revised and modernized edition of the volume originally published in 1933. It has been brought up to date by a rather impressive group of contributors who are recognized authorities in their particular fields.

Medical licensure examinations have become more general in the coverage of subject matter. The text of the book therefore consists of general discussions of the various basic sciences and clinical fields of medicine. This method of presentation makes the book of value not only to those preparing for licensure examinations, but to anyone interested in a review of the basic principles in any of the divisions of medicine included.

At the close of each section there is a list of typical state board questions, which aids the reader in evaluating what he has gained from the preceding section. The discussions are clearly written and easy to read, and the book appears to be adequately indexed.

The only criticism which this reviewer has to offer is that the discussions of controversial matters do not always present more than one side of the issue.

In general the book is recommended for the purpose for which it was intended.

Morphologic Hematology. Special Issue No.

1 of Blood, The Journal of Hematology. Edited by William Dameshek. Price, \$3.75. New York: Grune & Stratton, Inc., July, 1947.

The growth and development of morphologic hematology are traced briefly in the introduction of this issue. It is pointed out that, while hematology began as morphology, most of the major morphologic contributions were made prior to 1924. Since that time hematologists have been far more interested in the physiopathologic and chemical aspects of the blood than in purely cytologic study. With the more recent development of various histochemical techniques such as phase microscopy, however, morphology is once again making an active and interpretative contribution to the field of hematology.

This special issue of *Blood* contains eighteen articles which are primarily of interest to the hematologist and hematologic technician. Although it deals chiefly with morphologic studies and techniques, it is not a review of the recent work and status of morphologic hematology, but is rather a supplement to the rapidly expanding volume of hematologic study currently appearing in the regular issues of this journal.

Some of the various techniques described open up new and promising avenues of investigation. That certain of these will have clinical application in the not-too-distant future is suggested, for example, by the *in vitro* studies of bone marrow and its response to various stimulating substances such as liver extract and plasma; the apparent correlation between the phagocytic activity of anemic blood and resistance to infection; and the platelet-agglutination studies which may well lead to a clearer concept of blood coagulation and the etiology of thrombotic and hemorrhagic disorders.

A Textbook of Clinical Neurology, with an Introduction to the History of Neurology. By Israel S. Wechsler, M.D., Clinical Professor of Neurology, Columbia University, N. Y.; Neurologist, The Mt. Sinai Hospital; Consulting Neurologist, Montefiore Hospital and Rockland State Hospital, N. Y. Ed. 6. 829 pages with 162 illustrations. Price, \$8.50. Philadelphia and London: W. B. Saunders Company, 1947.

Although the sixth edition of Wechsler's *Textbook of Clinical Neurology* has been modified slightly, the changes have been minimal and the book is essentially the same as the previous edition. The most outstanding change has been the addition of a small section dealing with psychologic diagnosis. This section replaces the section on psychometric tests included in the previous edition.

This book has been a standard text of neurology for many years. It includes adequate descriptions of all the important neurologic conditions. The approach is primarily descriptive, and there is a tendency for the author to emphasize signs and symptoms rather than etiology and pathologic physiology.

This volume must certainly be considered adequate for a student textbook in neurology, but it could scarcely be considered as a reference text on the subject.

Sexual Behavior in the Human Male. By Alfred C. Kinsey, Professor of Zoology, Indiana University; Wardell B. Pomeroy, Research Associate, Indiana University; and Clyde E. Martin, Research Associate, Indiana University. 804 pages, with 173 charts and 159 tables. Price, \$6.50. Philadelphia and London: W. B. Saunders Company, 1948.

This volume represents the first scientific approach to the study of a fundamental life process. The approach is the objective biologic one which examines man as a species of animal. The alterations in his sexual behavior induced by civilization—particularly the habits, customs and education of the individual—are studied, and the facts are applied to the sociologic study of man. Since the results are found to be colored so much by the background of the individual and since only men of this country have been questioned, the study might better be titled "Sexual Behavior in the American Male."

The factual data were accumulated by thousands of personal interviews. Several interesting conclusions are drawn which are at variance with the accepted impressions. There is a great difference in the reaction and habits of men of different educational levels; the differences between those of grade school and college training are quite striking. They become apparent even before the men mature and are reflected in early experiences before college age. These findings must reflect the individual's home background and environment as much as his educational opportunities. Though men of grade-school education have much more sexual experience before and in the early years of marriage, they tend to become more monogamous as the years go on; the exact reverse is true of college men.

The study examines the total sexual outlet of the man and throws into perspective several problems. Masturbation, nocturnal emission, petting, and intercourse are all considered as forms of sexual outlet. The effect of each of these on the subsequent marital adjustment is examined. It is concluded that the sex habits of the modern American male have changed little from those of preceding generations. The prostitute is less of a problem than one would judge from fiction and from the venereal disease control

programs. The problems of homosexuality and of animal contacts are greater than generally recognized. The authors conclude that the degree of petting indulged in by the current young generation has not increased promiscuity and premarital intercourse, but has served as a substitute outlet for sexual emotions. Need for considerable thought on the question of what constitutes sexual perversion is indicated. The study indicates that oral-genital contact is sufficiently frequent to be considered a normal accompaniment of mating.

The facts uncovered by this study deserve careful consideration by those who make and enforce laws. Social workers and clinicians should find the book of aid in interpreting the normality of patterns in individuals whom they see professionally. Many questions raised are left unanswered, but further study of the data is in progress. Future study will doubtless give the answer to the other half of the problem—the sexual behavior of the female.

Practical Child Guidance and Mental Hygiene. By Samuel Kahn, M.D., Ph.D., Grace Kirsten, A.B., and May Elish March, A.B., M.A. 285 pages. Price, \$4.00. Boston: Meador Publishing Company, 1947.

This book falls far short of its goal of being a "good book on Child Guidance." It is written in the Socratic question-answer form. The answers are brief, extremely dogmatic, and often inadequate. In trying to be practical the authors dispense advice which is potentially dangerous if taken seriously. Several questions picked at random illustrate this point:

"My child never wants to play. She is always studying and working. What might her trouble be?"
The recommended course of action is: "This asocial behavior should not be permitted because it may be the early symptom of schizophrenia." There is not a word about the solution of the trouble which is causing this child's presumably abnormal reactions.

"I have a seven and a half year old son who protects his three and a half year old brother against others. At home, however, he calls him stupid and says, 'You are dead.' How should I handle them?"
This question is answered by a four-sentence paragraph in which the parent is advised what to tell the older son! There is no mention of the feelings of parental rejection causing the exhibition of antagonism toward his brother, and no advice to the parents about remedying these feelings of rejection.

Preceding each chapter there is a short introductory discussion of the problems to be taken up. These discussions are good as far as they go. It is hoped that in future editions these sections will be expanded, and the question-and-answer sections greatly curtailed or eliminated.

Twentieth Anniversary Year of Harofe Haivri The Hebrew Medical Journal

The attention of the medical profession is directed to the appearance of the Fall issue of *Harofe Haivri* (The Hebrew Medical Journal), a semi-annual bilingual publication edited by Moses Einhorn, M.D.

In the medical section, the following subjects are offered: "The Importance of the Rh Factor in Clinical Medicine" by Philip Levine, M.D., and "Pharmacology and Toxicology of Streptomycin" by Ernst Pick, M.D.

The original articles are summarized in English to make them available to those who are unable to read Hebrew. The editorial office of The Hebrew Medical Journal, 983 Park Avenue, New York 28, N. Y., will be glad to furnish any further information desired.

BULLETIN BOARD

(CONTINUED FROM PAGE 56)

INTERNATIONAL SURGICAL ASSEMBLY

The Sixth International Assembly of the International College of Surgeons will be held in Rome, Italy, at the invitation of the Italian Government, during the week of May 16-23, 1948. Attendance is not limited to the members of the College; all surgeons in good standing in their medical organizations are invited. Scientific meetings, scientific and commercial exhibits, visits to the Universities of Turin and Milan have been arranged, together with tours to other medical centers in Europe. Detailed information may be obtained from Dr. Max Thorek, General Secretary, 850 Irving Park Road, Chicago 13. For travel information, address the All Nations Travel Bureau, 38 S. Dearborn Street, Chicago, the official travel representatives for this Assembly.

PHARMACEUTICAL-MEDICAL RESEARCH FOUNDATION

The following announcement was made by Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association*, at the Scientific Award Ceremony by the American Pharmaceutical Manufacturers' Association in honor of the American Medical Association, held at the Waldorf-Astoria in New York on December 16.

"A committee has been organized to establish a new foundation for basic medical research, to improve the public health. It is a committee of representatives from the pharmaceutical (including the medicinal chemical) industry and the medical profession.

"The representatives from the pharmaceutical industry are Mr. S. DeWitt Clough, Chairman of the Board, Abbott Laboratories; Mr. A. H. Fiske, Vice President, Eli Lilly and Company; Mr. Elmer H. Bobst, President, William R. Warner & Co., Inc.; Mr. John L. Smith, President, Chas. Pfizer & Co., Inc.; Mr. S. Barksdale Penick, Jr., President, S. B. Penick & Co.; Mr. M. C. Eaton, President, Norwich Pharmacal Co.; and Mr. Charles Wesley Dunn, of the New York Bar. The representatives from the medical profession are the following officers of the American Medical Association: Dr. R. L. Sensenich, President-Elect; Dr. E. L. Henderson, Chairman of the Board of Trustees; Dr. Ernest E. Irons, Secretary of the Board of Trustees; Dr. Morris Fishbein, Editor of the *Journal*; and Dr. Austin Smith, Secretary of the Council on Pharmacy and Chemistry. Dr. Sensenich is chairman of the committee.

"This foundation is an historic development, because it is the first joint action by the pharmaceutical industry and medical profession in such an organization for basic medical research. Therefore it will be named **The Pharmaceutical-Medical Research Foundation**. And it will be financially supported, in major part, by the pharmaceutical industry, as a contribution to the national welfare.

"The foundation will be a wholly public institution in purpose, conduct and service. Its governing board will include distinguished and appropriate representatives of the general public, in addition to leading representatives of the pharmaceutical industry and medical profession. The board will determine its program of scientific research, on the basis of a recommendation by an authoritative scientific advisory committee and the advice of an eminent scientific director. It is contemplated that the initial basic research by the foundation will be in the field of the degenerative diseases, where there is an urgent need for it."

VETERANS ADMINISTRATION

Veterans Administration has announced that **prima facie** evidence will not be accepted as sufficient proof for veterans to establish service-connection for medical and dental treatment after December 31, 1947. On this date, veterans had had a full year after the President announced the end of hostilities in which to secure treatment on the presumption of service-connection, based on **prima facie** evidence.

Applications for treatment mailed after December 31 will have to be formally adjudicated under the regulations before treatment other than emergency can be given.

This ruling in no way affects the year's presumption of service-connection to which all veterans are entitled after discharge.

POSTGRADUATE COURSE IN DISEASES OF THE CHEST

The American College of Chest Physicians, Pennsylvania Chapter, and the Laennec Society of Philadelphia are sponsoring a postgraduate course in diseases of the chest to be held during the week of March 15-20, 1948, at the Warwick Hotel, Philadelphia, Pennsylvania.

The emphasis in this course will be placed on the newer developments in all aspects of diagnosis and treatment of diseases of the chest.

The course will be limited to 30 physicians. Tuition fee is \$50.00 for members, and \$90.00 for non-members.

Further information may be secured at the office of the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

POSTGRADUATE COURSE IN PHYSICAL MEDICINE AND REHABILITATION

The University of Texas, Medical Branch, announces a postgraduate course in Physical Medicine and Rehabilitation to be held in Galveston, March 1-5, 1948. The course is designed for the general practitioner and specialist interested in the more effective use of physical medicine.

Those planning to attend are requested to register in advance with Dr. T. G. Blocker, Director of Postgraduate Study. A tuition fee of \$25.00 for physicians and administrators and \$15.00 for registered technicians will be charged. An additional \$2.00 fee will be charged those desiring certification of attendance at the course.

Those desiring further information regarding the course should write Dr. W. A. Selle, Director of Postgraduate Course in Physical Medicine, University of Texas, Medical Branch, Galveston, Texas.



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MANAGEMENT OF OCCUPATIONAL DERMATOSES

DAVID G. WELTON, M.D.

CHARLOTTE

The subject of occupational dermatoses is of interest not only to dermatologists, but also to the many general practitioners and general surgeons whose patients are employed by industry and in agriculture. The proper management of a patient who presents a cutaneous eruption which may be occupational in origin is important to him and to his employer in several ways: first, in providing symptomatic relief and rapid healing for the patient and in preventing loss of working time; second, in preventing aggravation or recurrence of the eruption; and third, in preventing occurrence of the dermatitis among the other employees who are similarly exposed. This problem requires therefore the understanding and consideration of several factors—namely, the medical management of the patient's dermatosis, the economic factor concerned in the possible loss of time from work (which affects not only the patient's income but also the production in his place of employment), and the medico-legal factor involved in determining whether or not the particular case is compensable under the provisions of the North Carolina Workmen's Compensation Act.

During the twelve-month period ending June 30, 1945, there were 6,870 man-days lost in North Carolina because of occupational dermatoses and irritations of the eye⁽¹⁾. This loss of time can be reduced by improved cooperation among the parties concerned—

namely, the patient, the physician, the employer and his insurance carrier, and the state Industrial Commission. Temporary transfer of the worker to a job which is not irritating to his skin, and the subsequent proper placement of this worker after his dermatosis has healed are essential in preventing loss of time. Some discussion between the physician and the employer (or his personnel director) will be necessary, but the time thus spent is time well invested for all concerned. The subject of pre-employment examinations and placement of workers is too large to discuss at this time, but it should be mentioned that a good number of occupational dermatoses could be avoided if the placement of new workers were guided by a careful pre-employment history and examination, so that those persons with a history or clinical evidence of cutaneous allergy or of a chronic skin disease would not be exposed to substances which are known skin irritants or sensitizers.

In order to assist suitably in the achievement of the above objectives, and particularly in order to facilitate the identification of the skin irritant, the physician should be familiar with the employee's job—not only with his specific duties, but also with his working environment. Therefore, I urge those of you who have frequent contact with this type of patient to visit the industrial plants in your community and to become familiar with the actual working conditions of your patients. After doing so, you will find that often your diagnostic problems (non-occupational as well as occupational) are more easily solved; in addition, you will gain added respect from the workers and employers alike.

Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 13, 1947.

1. Sixteenth Annual Statistical Report of Industrial Accidents Reported to North Carolina Industrial Commission, year ending June 30, 1945, Raleigh, N. C. (Note: Occupational Dermatitis and Irritations of the Eye are combined in one category.)

Definitions

The term "occupational dermatosis" is really more a medicolegal than a clinical term. Officially it has been defined as "a pathologic condition of the skin for which occupational exposure can be shown to be a major causal or contributory factor"⁽²⁾. It should be noted that this definition does not exclude the aggravation or exacerbation of a *pre-existing* dermatosis by the occupational exposure. The list of compensable occupational diseases in the North Carolina Workmen's Compensation Act includes: "Infection or inflammation of the skin or eyes or other external contact surfaces or oral or nasal cavities due to irritating oils, cutting compounds, chemical dust, liquids, fumes, gases or vapors"⁽³⁾. Metallic poisoning; chrome ulceration; epithelioma due to tar, pitch, bitumen, and so forth; blisters due to the use of tools; radium poisoning; and injury by x-ray are also specified. In effect, these provisions cover most dermatoses due to occupational exposure.

It is timely at this point to warn against jumping hastily to a "*post hoc, ergo propter hoc*" conclusion in these cases. The mere fact that a patient's job involves exposure to one of the above substances does not by any means prove that his dermatosis is due to that exposure. The physician should record a detailed history, including the patient's habits and exposures *away* from work as well as those at work, and should perform, or have a consultant carry out, patch tests and other special studies when indicated, *before* rendering his final opinion as to the etiologic agent in each case.

From a clinical standpoint, an occupational dermatosis is "dermatitis venenata" or "contact dermatitis." Although the term "contact dermatitis" is perhaps more widely used, "dermatitis venenata," which is synonymous, is the official term designated in the STANDARD NOMENCLATURE OF DISEASE⁽⁴⁾. Both terms denote a skin eruption which originates from external irritation. Andrews has pointed out, however, that this connotation is incomplete, since the same eruption,

in some instances, can be produced by the same substance administered internally⁽⁵⁾. It is also known that certain poisonous substances may be absorbed through the skin and produce dermatitis as a systemic manifestation. For example, trinitrotoluene usually produces a dermatitis venenata by external contact and sensitization, but it may also produce a toxic eruption following its absorption directly through the skin. The term "contact eczema" describes a chronic dermatitis venenata; allergic sensitization should be suspected here.

Incidence

Schwartz has estimated that 65-70 per cent of all occupational *disease* in this country is occupational dermatitis⁽⁶⁾. Although this is a high percentage, it should be remembered that we are speaking of occupational *disease* only, excluding injuries. In many plants, dermatitis may be the only occupational disease encountered. The same author has also stated that more than 1 per cent of all the workers in this country suffer from occupational dermatoses, and that the average patient who receives compensation for a dermatosis loses ten weeks from work.

The most recently available data for North Carolina are found in the annual report of the North Carolina Industrial Commission for the year ending June 30, 1945⁽¹⁾. During this period 820 cases of occupational diseases were reported; 58 per cent of the 11,742 man-days lost therefrom were due to the 653 cases of "infection or inflammation of the skin or eyes," an average of 10.5 man-days being lost per case. (During the same period, 440,504 man-days were lost from occupational *injuries*.) When one considers the various agricultural enterprises in North Carolina, the textile, hosiery, and other manufacturing industries, and the chemical and mining industries, one realizes that the variety of occupational exposures in this state is unusually wide.

I would like briefly to present to you some of the results of a study which I made during a thirty months' period in a shell-loading plant near Charlotte. This plant, owned by the United States Navy and operated by the

2. Lane, C. G. et al.: Industrial Dermatoses: A Report by the Committee on Industrial Dermatoses of the Section on Dermatology and Syphilology of the American Medical Association, J.A.M.A., 118:3613-3615 (Feb. 21) 1945.
3. The North Carolina Workmen's Compensation Act, issued by the N. C. Industrial Commission, T. A. Wilson, Chairman, Raleigh, N. C., March, 1915, p. 35.
4. Jordan, E. P.: Standard Nomenclature of Disease and Standard Nomenclature of Operations, Chicago, American Medical Association, 1942, p. 129.

5. Andrews, G. C.: Diseases of the Skin for Practitioners and Students, Philadelphia, W. B. Saunders, 1946, pp. 94, 102, 103.

6. Schwartz, L.: The Incidence of Occupational Dermatoses and Their Causes in the Basic Industries, J.A.M.A., 111: 1523-1528 (Oct.) 1938.

Table 1

Incidence of Occupational and Non-Occupational Diseases or Injuries in a Shell Loading Plant during a Twenty-Seven Month Period (Feb., 1943-June, 1945)

Total number of employees.....	191,885*
Total number of new patients seen.....	157,203
With occupational diseases or injuries	46,902 (29.8%)
With non-occupational diseases or injuries	110,301 (70.2%)

*This total is the sum of the number of employees on the payroll at the end of each month; the "turnover" was high throughout the twenty-seven months. The average number on the monthly payroll was 7,106; the average number of new patients seen per month was 5,822.

Table 2

Incidence of Occupational and Non-Occupational Dermatitis in a Shell Loading Plant

New patients seen during 27-month period	157,203
New cases of dermatitis seen during same period	4,128 (2.62%)
New cases of dermatitis seen during 30-month period	4,429
Occupational	1,526 (34.4%)
Non-occupational	2,903 (65.6%)

U. S. Rubber Company, was spread out over several square miles; there were six first-aid stations, in addition to the main dispensary and emergency hospital, in operation twenty-four hours daily. More than 70 per cent of the workers were women, many in the older age groups, and it was necessary to provide more than the usual industrial medical program in order to keep them on the job; all minor injuries were reported and treated, and many minor non-occupational treatments were rendered (table 1).

Many of these employees were exposed, for the first time, to TNT, tetryl, and other skin sensitizers and irritants; yet the overall incidence of dermatitis was just 2.6 per cent (table 2), and only one third of these cases were actually occupational in origin. Visits made to other similar plants revealed that there was great concern over the number of cases of dermatitis, which was routinely blamed on the explosive powders; when careful dermatologic study was conducted, however, more than 50 per cent of these cases, in many instances, were found to be non-occupational in origin. Table 3 shows the occupational causative agents; TNT and tetryl accounted for 60 per cent of this group. Two thirds of all our patients with dermatitis had non-occupational conditions; the ten commonest diagnoses are

Table 3

Causes of Occupational Dermatitis in a Shell Loading Plant

1526 new cases (3.2% of all new patients with occupational conditions)

Cause	Incidence
TNT	39%
Tetryl	20.3%
Friction dermatitis	12%
Solvents	7.7%
Other powders	2.6%
Unclassified	8.5%
Undiagnosed	2.2%

Table 4

Non-Occupational Dermatitis in a Shell Loading Plant

Incidence
65.6% of all new dermatitis cases seen.
2.6% of all non-occupational conditions.

Types (10 commonest)

Dermatitis venenata
Chapped skin and pruritus hiemalis
Heat rash
Fungus infections
Acne vulgaris
Eczema
Folliculitis
Seborrheic dermatitis
Urticaria
Herpes simplex

listed in table 4. Although there is much less exposure to explosive powders now than there was during the war, many industries are developing new chemical products such as resins, plastics, and other compounds, some of which may be skin irritants.

Analysis of a broader study, which included 41,628 cases of occupational dermatoses reported to the U. S. Public Health Service by seven states (including North Carolina), has been published by Brinton and Schwartz⁽⁷⁾. Petroleum products, greases, alkalies, cement, solvents, plants, woods, metals, and metal plating were the responsible agents most often encountered in this series.

Case Reports

I would like to turn now to the presentation of several representative cases.

Case 1

A white man, aged 26, had been working as a tire recapper for six months prior to September 24, 1946, when he presented himself with a dermatitis venenata of both hands. During the two months' duration of this eruption he had applied several patent remedies which aggravated the dermatitis, so that his condition was the result of overtreatment superimposed on occupational irritation. The acute phase of the eruption subsided with the use of a 1:30 dilution of Burow's solution in the form of wet dressings.

7. Brinton, H. P., and Schwartz, L.: Dermatitis Cases Reported among Workers in Seven States, *Industrial Medicine*, 11:617-627 (July) 1945.

Patch tests were then performed; moderate reactions, persisting for seventy-two hours, were produced by rubber cement, buffing rubber, and camel-back. The substance which he had found most irritating while at work, however, was a rubber solvent which was a primary irritant; it was probably the original cause of his dermatitis. Since he was unable (or unwilling) to work with protective gloves, it was necessary to remove him from this job in order to bring about healing.

Case 2

A 34-year-old white man had worked for six months in the dye house of a hosiery plant when an eruption of his hands occurred. As most of you know, anyone who works in or near a dye house is inclined to attribute all of his ills, particularly any skin eruption, to "dye poisoning." In his work, this man put baskets of stockings in and out of large metal drums through which various dyes and cleaners were run; he also had to remove sample stockings at different periods of each "run," and his hands became wet with these solutions. His eruption had been present three weeks when he came for treatment, and he had noticed that it improved each weekend (he did not work Saturday and Sunday), and became worse again each Tuesday or Wednesday.

Patch tests were negative to all the dyes he came in contact with, but were positive to several of the soap cleansers he used at work. A visit to this plant revealed a new, modern, dye department which was hygienically ideal with one exception: there were several barrels of different cleansers (soap flakes and powders) standing open in a side room. It was the habit of the men to thrust their wet hands down into a barrel of soap and then wash up. This procedure resulted in a high concentration of soap on the skin, and, of course, wasted soap. The superintendent had realized that this situation was undesirable and arranged to correct it.

The patient was transferred to a different job, weighing out batches of all the dyes, and was given a soap substitute to use at work (and at home). His dermatitis cleared up under mild treatment, which included some superficial x-ray therapy, in spite of the fact that he was handling dye powder eight hours daily!

Case 3

A white girl, aged 26, had worked for several years at a "finishing plant" and was handling sheets when an eruption occurred on the back of her hands. This is a favorite site for occupational dermatitis of the eczematoid type, but patch tests with the sheets were negative. This finding did not prove that the sheets were harmless, however; in fact, it was necessary to remove this girl from her job in order to obtain healing of her hands. After her hands were well, she returned to the same plant, but on a new job. She had no trouble for three months, when a similar eruption recurred on the hands. Patch tests on this occasion showed positive reactions to four colored rayons and one wool cloth. It was necessary to transfer her again in order to obtain healing of her hands; office work was then recommended.

Case 4

An 18-year-old student nurse had had a recurrent eruption of the eyelids for one year. Ordinarily this clinical picture suggests cosmetic sensitization, particularly to fingernail polish; however, this girl used no cosmetics except lipstick. Patch tests were performed with all the drugs and medications she handled; positive reactions were obtained with codeine and "Ketochole." She was removed from contact with all drugs during the treatment period;

after returning to floor duty she avoided these two and has had no further trouble.

Case 5

A 61-year-old farmer had had a recurring contact eczema of the face, neck, and ankles for more than three years. This always became worse after he worked in the field or walked through weeds, and improved if he stayed indoors. Patch tests were strongly positive to bitterweed, goldenrod, crab grass, and pokeweed. In fact, the reaction to one drop of bitterweed extract extended over the upper half of his back; subsequent tests to 1:100 and 1:1,000 dilutions also gave positive reactions. He is being desensitized with a 1:10,000 dilution of the bitterweed in corn oil.

Case 6

A prominent physician consulted me in April, 1946, because of a persistent edema and eczema of the right eyelid of eight weeks' duration; this was associated with conjunctivitis which the ophthalmologists had been unable to cure. In addition, he presented a dorsal eczema of the right fingers. The distribution and eczematous nature of this eruption suggested contact sensitization; the cause was a photographic developer ("Metol") which he handled in very small amounts but almost daily in the processing of electrocardiograms. Strict and complete avoidance of this substance was necessary in order to clear up his dermatitis and to avoid recurrence.

Etiologic Diagnosis

These cases illustrate some of the basic problems in the management of occupational dermatoses; often the solution of such a problem requires a combination of thorough clinical investigation and understanding of the occupational exposure. Employment data are important and should include a description of the job performed, any recent changes in duties or contacts, the length of time the patient has performed this job, and information about similar eruptions in fellow employees. The medical portion of the history should include the date it was first noticed, information about any previous dermatitis, and a list of all things which had been applied to the skin or taken internally. Many patients make their dermatitis worse by applying home or patent remedies; these should always be suspected as well as the occupational exposure. Medicated soaps are commonly used on skin eruptions and usually aggravate the dermatitis. The choice of a skin cleanser is an important matter in any industry; almost any soap or soap-substitute may be irritating under certain conditions. Andrews has stated that the most common injurious agents are soap and water⁽⁵⁾; one should not forget the soaps used by the worker at home.

In considering a group of suspected irritating substances, it is important to recog-

nize those which may be primary irritants. By a "primary irritant" is meant "a substance which will cause dermatitis by direct action on the normal skin at the site of contact, if it is permitted to act in sufficient intensity or quantity for a sufficient length of time."⁽⁸⁾ For example, sulfuric acid is ordinarily a primary irritant; but a 1 per cent solution of sulfuric acid might not be a primary irritant. The concentration is often the significant factor. Lists of the common primary irritants in each industry have been published by Weber⁽⁹⁾, Schwartz and his co-authors⁽¹⁰⁾, and others. They are distinguished from "secondary irritants," which produce dermatitis only in those persons who have been sensitized to them. Because of the danger of aggravating or causing dissemination of the dermatitis, it is inadvisable to perform patch tests while the eruption is acute; likewise it is dangerous to employ a substance which is a primary irritant in patch tests.

Patch tests, whether positive or negative, have definite limitations. A negative test, for example, may be due to one of several factors: too low a concentration of the test substance; lack of sensitivity or susceptibility at the test site; testing during a refractory period; and inability to reproduce accurately at the test site the working conditions to which the skin is customarily exposed. Heat, friction, humidity, and perspiration play a part in many of these cases, and cannot be reproduced accurately in the office. A false-positive patch test may be elicited by a primary irritant, a secondary irritant in too strong a concentration, or by testing the patient during a period of hypersensitivity or polysensitivity. From a medicolegal standpoint a positive patch test does not in itself incriminate the substance, but is confirmatory evidence if all non-occupational factors have been excluded.

Essential diagnostic criteria have been summarized by Sutton and Sutton⁽¹¹⁾ as follows:

1. The dermatitis appears at any time during a period of industrial exposure or within

three weeks following cessation of the exposure.

2. The eruption disappears or improves after the patient is removed from the causal exposure (provided that none of the irritating material remains on the clothing of the worker).

3. The eruption shows a tendency to recur or to become worse when the worker returns to the identical exposure.

Other criteria include the appearance of the eruption at the sites of maximum exposure, its similarity to the eruptions of other workers who have had the same exposure, and positive patch tests.

Treatment

The first two objectives of treatment are symptomatic relief for the patient and the removal of the patient's skin from the irritating exposure. The use of soap and water is to be avoided except in the period immediately following harmful exposure, when it may be useful to remove the offending agent. Chemical neutralizers are occasionally indicated, as in the case of burns with an acid or alkali. Potassium permanganate is sometimes useful when an oxidizing agent is indicated. Before applying *any* local medication, however, one should remember that the skin has already been damaged, and may not tolerate what it normally would.

In the acute, vesicular eruptions mild, cool wet dressings with boric acid solution, isotonic salt solution, Burow's solution in a 1:15 or 1:30 dilution, or a 1:5,000 dilution of potassium permanganate are usually soothing and healing. In a dry, acute eruption calamine lotion or plain zinc oxide paste may be used. In the subacute or chronic periods, ointments containing 2 to 5 per cent ichthammol or naftalan are useful. If secondary infection is present, wet dressings should be used first, followed by a mild mercury ointment, or ichthammol. After many chemical irritations, a minimum period of two weeks is required by the skin before active healing is noticeable; therefore the physician should not be in a hurry to change to stronger measures every few days. The routine use of sulfonamide or penicillin ointments is inadvisable because of their sensitizing properties.

Internal treatment is occasionally indicated—for example, in the chronic or exten-

8. Schwartz, Louis, and Peck, Samuel: Symposium on Occupational Dermatoses, American Academy of Dermatology and Syphilology, Cleveland, Ohio, December, 1946.

9. Weber, L. F.: External Causes of Dermatitis; List of Irritants, Arch. Dermat. & Syph. 35:129-179 (Jan.) 1937.

10. Schwartz, L., Tulipan, L., and Peck, S.: Occupational Diseases of the Skin, Philadelphia, Lea & Febiger, 1947.

11. Sutton, Richard L., and Sutton, Richard L., Jr.: Diseases of the Skin, ed. 10, St. Louis, C. V. Mosby, 1939, p. 293.

sive cases. Mild sedation may be temporarily necessary in severe, acute cases; Benadryl or Pyribenzamine is sometimes effective, but perhaps chiefly because of the sedative effect. Calcium preparations, given orally or parenterally, are favored by some, while others prefer the intravenous administration of sodium thiosulfate.

Superficial x-ray therapy is effective in selected cases, but should preferably be given by a dermatologist, because of the potentialities for overtreatment and of permanent damage to the skin.

Conclusion

Although it has been impossible to cover all the essential material pertaining to the field of occupational dermatoses and their management, it is hoped that the discussion presented will be of some practical use to the physicians who are concerned with this problem.

Discussion

Dr. J. M. Hitch (Raleigh): As Dr. Welton has demonstrated, the problem of occupational dermatitis is no small one. Perhaps the final etiologic diagnosis is largely within the province of the dermatologist, but the original recognition of the probable origin of the dermatosis and its proper management may frequently be the responsibility of any physician.

I am afraid that North Carolina is not as conscious of this problem as are some of the more industrialized Northern states. The fact that the Industrial Commission combines these dermatoses with irritations of the eye is, I believe, indicative of this fact.

With the constantly increasing industrialization of this state, the problem of occupational dermatoses will be greatly magnified in the near future. As a matter of fact, I am certain that official reports for any year reflect only a small fraction of the dermatoses which are truly occupational in origin. In the first place, self-employed individuals, farmers, and the employees of many small, uninsured industrial enterprises rarely have reason to bring their disease to the attention of the Commission. In the second place, I believe that an appreciable portion of those who might well be entitled to compensation fail to apply for it. In my own practice in Raleigh, where there are practically no large industries, I frequently encounter patients with occupational dermatitis, but few of them think of seeking compensation.

Dr. Welton has pointed out that the term "occupational dermatosis" is really a medicolegal one and usually indicates the diagnosis of "contact dermatitis." All of the concepts employed in the diagnosis and treatment of occupational dermatoses can be transposed, therefore, to the larger field of everyday contact dermatitis with benefit. All the factors which are encountered and appreciated daily by the physician engaged in industrial dermatology are equally applicable to the non-occupational cases of contact dermatitis seen frequently by all of us.

The etiologic diagnosis of contact dermatitis is

often difficult, but I know of nothing which is more satisfying than to relieve a patient of a chronic incapacitating eczema by discovering an unsuspected contact allergen which can be completely eliminated. It is obvious that the first step in such study is to suspect the true nature of the difficulty. The deductive study necessary to establish the diagnosis of contact dermatitis must begin with a detailed history. The history of exposure must be correlated with the appearance and disappearance of the eruption. If the history is painstakingly obtained, such a correlation usually will become evident to both the physician and the patient. This is time-consuming but is well worth the effort, and all subsequent study is without significance unless predicated on an accurate and full history. As Sulzberger has said, "even the greatest numbers and longest, straightest rows of skin tests will too often prove useless" if done indiscriminately—that is, without an accurate history. If, after a proper history is taken, one has well-founded cause to suspect a contact etiology within a narrow range, he is justified in removing the suspected substance. There is no other equally accurate way of establishing the diagnosis. If, on the other hand, one cannot narrow the field of suspected substances sufficiently by means of the history, I feel that further study by patch testing had better be left to the dermatologist, who is informed on proper dilution and interpretation.

Dr. Welton's cases have illustrated several types of contact dermatitis encountered in industry. The principles of diagnosis and treatment are equally applicable to the non-occupational variety. Probably all of us should become more alert to this rather frequent etiology of acute and chronic eczematous eruptions.

ROENTGENOLOGIC CONSIDERATION OF UNILATERAL EXOPHTHALMOS

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Unilateral exophthalmos presents one of the most difficult diagnostic problems in roentgenology. The etiology of this condition is not necessarily similar to that of bilateral exophthalmos. In many instances unilateral exophthalmos is an external manifestation of a definite clinical entity. Spaeth⁽¹⁾ gives the following etiologic classification of unilateral exophthalmos: anatomic, traumatic, inflammatory, that due to disease of the blood and lymph systems, and that due to space-taking lesions. It is in this last group that roentgenography of the orbits⁽²⁾

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1. Spaeth, E. B.: Principles and Practice of Ophthalmic Surgery, Philadelphia, Lea & Febiger, 1944.

2. The most complete monograph on this subject is that by Pfeiffer, R. L.: Roentgenography of Exophthalmos with Notes on the Roentgen Ray in Ophthalmology, Am. J. Ophth. 26:724 (July); 816 (Aug.); 928 (Sept.) 1943.

is of the most value.

Roentgenography of the skull has made rapid advances since Caldwell⁽³⁾, in 1906, described a good technique for visualization of the paranasal sinuses and the orbital walls. There are few reports in the literature of positive roentgenographic demonstration of changes in the orbits. This fact would seem to suggest that such findings are rare. When careful roentgenographic study is made of the orbits, however, numerous conditions can be found.

Table 1 lists the various conditions found in 107 consecutive cases of unilateral exophthalmos studied roentgenologically at Duke Hospital. The diagnosis was made by x-ray in about a third of the cases. Many other conditions have been reported by Spaeth⁽⁴⁾ and Pfeiffer⁽²⁾, as well as by other writers.

Table 1

Diagnosis	No. Cases
Mucocele	11
Orbital or retrobulbar cellulitis or abscess.....	9
Meningioma	9
Lympho-epithelioma	7
Lymphosarcoma	6
Cavernous sinus thrombosis	4
Metastatic carcinoma	4
Orbital hemorrhage	3
Hemangioma	3
Tumors of the lacrimal duct and gland.....	3
Sympathicoblastoma	3
Squamous cell carcinoma	2
Lymphangioma	2
Hyperthyroidism	2
Chloroma	2
Retinoblastoma	2
Basal cell carcinoma	2
Neurofibroma	2
Schuell-Christie disease	2
Syphilis	1
Arteriovenous aneurysm	1
Aneurysm, internal carotid	1
Cholesteatoma	1
Osteoma	1
Malignant melanoma	1
Hemangio-epithelioma	1
Boeck's sarcoid	1
Congenital retrobulbar cyst	1
Astrocytoma, optic nerve	1
Scirrhus carcinoma of orbit	1
Adamantinoma	1
Giant cell tumor	1
Undifferentiated tumors	3
Undiagnosed cases	13
	107

Anatomy of the Orbit

The orbital cavity is irregularly cone-shaped, with the apex at the optic foramen posteriorly. The rim of the orbital entrance

is made up of dense bone which forms a circle, interrupted medially by the overlapping inferior and superior crests. The fossa between these crests accommodates the lacrimal sac.

The superior wall or roof of the orbit is formed by the orbital plate of the frontal bone and by the lesser wing of the sphenoid. It is dome-shaped, and although its under surface is usually smooth, the cranial surface most often presents a number of digital impressions. The inferior wall or floor of the orbit is formed by the orbital plate of the maxilla, the orbital portion of the zygoma, and the orbital process of the palatine bone. This wall is usually quite thin. The lateral wall, the most solid of all, is formed by the inner surface of the zygoma and the greater wing of the sphenoid. The superior orbital fissure is located in the lateral wall. The thin medial wall is formed by the ethmoid and sphenoid sinus plates.

Roentgenographically the orbital entrance or rim is readily identified as a dense bony structure which forms a ring that is incomplete medially. At this point, where the superior and inferior crests fail to meet anatomically, the roentgen shadow of the ethmoid cells is superimposed upon the orbit. The defect of the orbital entrance medially must not be mistaken for a pathologic destruction of bone.

The roof of the orbit can be studied readily in roentgenograms, but it presents great variations because of the differences in the normal digital patterns. The thickness varies according to the prominence of the digital markings, and great care and experience are necessary in evaluating each orbital roof. In the roentgenogram the sphenoid ridges are superimposed upon the orbital walls, and serve to separate the roof from the lateral wall.

The floor of the orbit shows fairly well in the usual frontal and maxillary sinus projections, and in many instances the intra-orbital groove can be seen very distinctly as it crosses the orbit. The portion of the maxillary sinus which projects upward into the orbit posteriorly is easily viewed and should always be studied with great care.

In the lateral wall lies the cleft of the superior orbital fissure. Many pathologic processes may produce changes in or about this fissure, which often give a clue as to the

3. Caldwell, E. W.: Skiagraphy of the Accessory Sinuses of the Nose. *Trans. Am. Q. Roentgenol.* 1:27-35, 1906.

4. Spaeth, E. B.: Pathogenesis of Unilateral Exophthalmos. *Arch. Ophth.* 18:107-148 (July) 1937.



Fig. 1. Panophthalmitis of three weeks' duration, with marked tension. The eye was removed and no bone erosion was found. The pathologic report was ophthalmitis. The roentgenogram shows only soft tissue swelling.

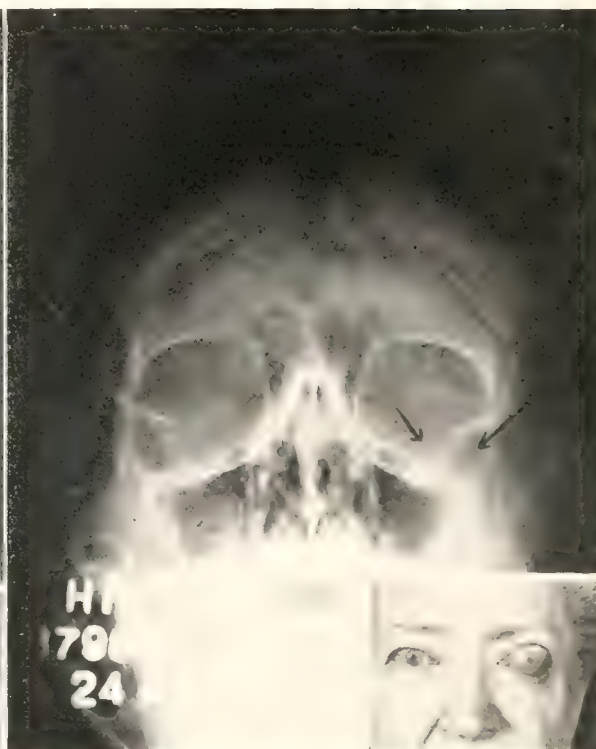


Fig. 2. This patient had a twenty-year history of exophthalmos following an eye infection. The roentgenogram shows bony thickening of the floor of the orbit, apparently pushing the orbit up and outward.

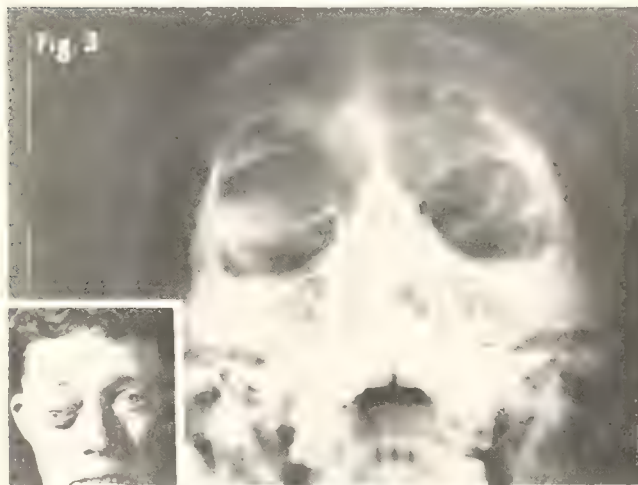


Fig. 3. Large mucocoele extending laterad, with erosion of the posterior wall and floor of the orbit.

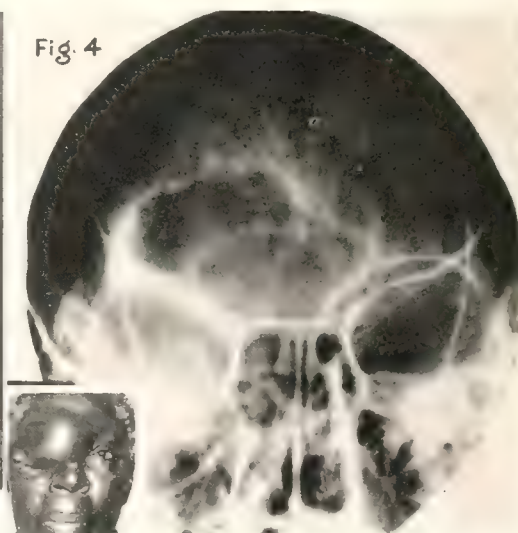


Fig. 4. Large mucocoele of the right frontal sinus and orbit. There is a large area of bone destruction extending into the posterior wall of the orbit.

cause of exophthalmos.

Because the orbits may be involved by processes occurring in near or distant structures, it is necessary to be constantly aware of the possibility of extra-orbital lesions producing orbital signs.

Lymphatic Structure of the Eye⁽⁵⁾

Very little lymphoid tissue is present in the orbit. The conjunctiva and lacrimal gland are the chief extrabulbar structures that contain any amount of lymphoid tissue. Lymphomatous masses may appear in any portion of the conjunctiva. The conjunctiva possesses lymphatics which make up a superficial and a deep plexus. These form minute plexi at the margin of the cornea, and probably communicate with those of the cornea.

Differential Diagnosis

The three most common conditions causing unilateral exophthalmos are trauma, inflammations, and neoplasms. Hyperthyroidism occasionally produces a unilateral exophthalmos. The clinical information is of tremendous importance in the differential diagnosis. The rate of progress of the exophthalmos and the age of the patient will be of assistance in some cases. Generally speaking, the neoplasms appear in the early and late years of life, while inflammatory conditions are most frequent from middle to later life. The exophthalmos frequently becomes bilateral in inflammatory conditions, rarely in tumors.

Trauma

Fractures in and about the orbit often cause hemorrhage and sometimes secondary infections. Culler⁽⁶⁾ found many instances of extensive fractures following minor accidents.

In cases of pulsating exophthalmos, due to *arteriovenous aneurysm*, a history of injury may often be elicited. A cranial arteriogram will usually show the aneurysm.

Inflammatory conditions

In the inflammatory conditions the exophthalmos is usually confined to one orbit. The most common of these conditions is *frontal sinus disease*. *Cavernous sinus thrombosis* and *thrombophlebitis of the orbital veins* often result in ophthalmitis and exophthal-

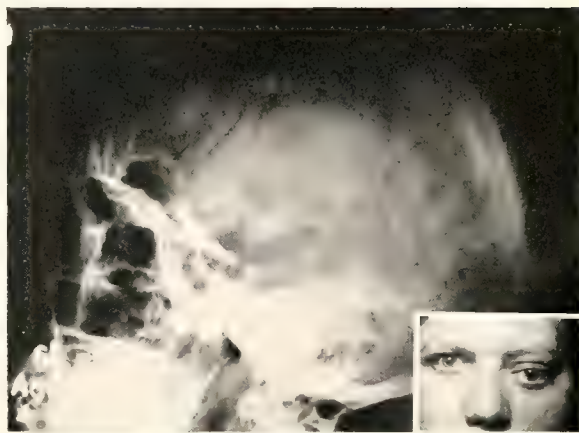


Fig. 5 (Case 1). Extradural diploic epidermoids. The roentgenogram shows sharp scalloped erosion in the supra-orbital region.

mos. Ophthalmitis does not present any characteristic appearance. Figure 1 illustrates an instance of this condition. *Osteomyelitis* involving the orbital fossa will cause displacement of the orbit (fig. 2).

Neoplasms

Exophthalmos is often the first indication of *mucocoele* extending into the orbital wall. Figures 3 and 4 illustrate the importance of roentgen study plus careful clinical investigation by a competent rhinologist.

Another group of rather rare cases are the *cysts*, retrobulbar and subperiosteal. Knapp⁽⁷⁾ and Anderson⁽⁸⁾ have each reported cases of diploic epidermoids. These lesions are thought to be developmental defects of embryologic origin.

Case 1: A young white female, aged 24, complained of a gradual loss of vision over the past four years. There was no history of any previous inflammation. The eye showed 5 mm. of exophthalmos. A firm, spongy mass was felt above the eye. Roentgen examination showed a sharply defined bone defect with white scalloped margins (fig. 5). It closely simulated cholesteatoma. The tumor was removed. The pathologic diagnosis was "Extradural diploic defect of epithelial origin arising embryologically due to developmental defects."

Osteomas arising in and around the orbit may extend into the orbital fossa. They are readily detected by roentgenograms (fig. 6 and 7).

In cases of *xanthomatosis* (Schüller-Christian syndrome), the tumefactions frequently occur near the orbit, resulting in orbital

5. Reeves, R. J.: Lymphoblastoma (Hodgkin's Disease) of the Orbit, *Am. J. Roentgenol.* 17:642-645 (June) 1927.
6. Culler, A. M.: Fractures of the Orbit, *Tr. Am. Ophth. Soc.* 38:348-369, 1940.

7. Knapp, A.: Oil Cyst of the Orbit, *Arch. Ophth.* 52:163-165 (March) 1923.
8. Thornhill, E. H. and Anderson, W. B.: Extradural Diploic Epidermoids Producing Unilateral Exophthalmos, *Am. J. Ophth.* 27:477-483 (May) 1944.

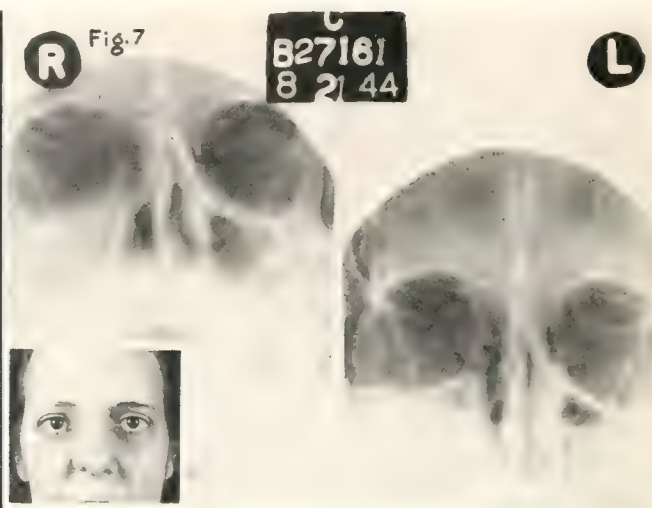


Fig. 6. Large osteoma of the nasal passage, involving the anterior and posterior ethmoids and partly blocking the right antrum. There was 5 mm. of exophthalmos.

Fig. 7. After removal of the osteoma, exophthalmos has disappeared.

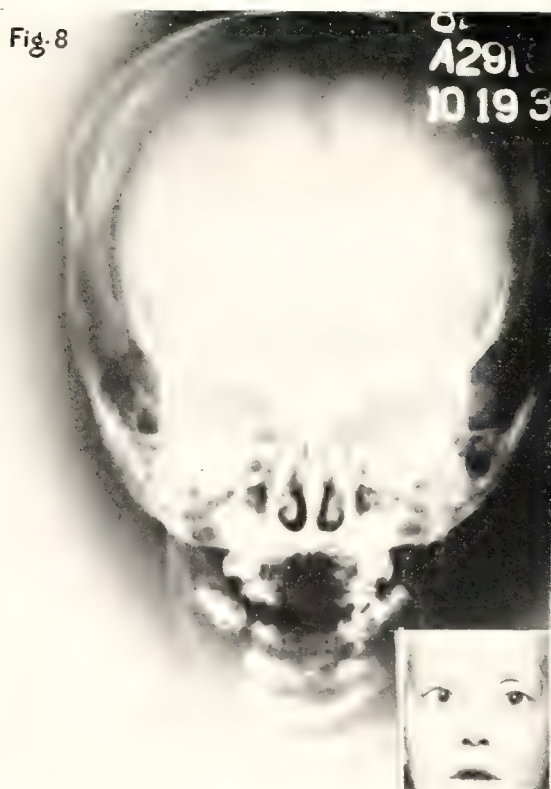


Fig. 8. Schueller-Christian xanthomatosis, with bone destruction in the left supra-orbital region and moderate exophthalmos.



Fig. 9. Bone regeneration following roentgen therapy to frontal region.

Fig. 10

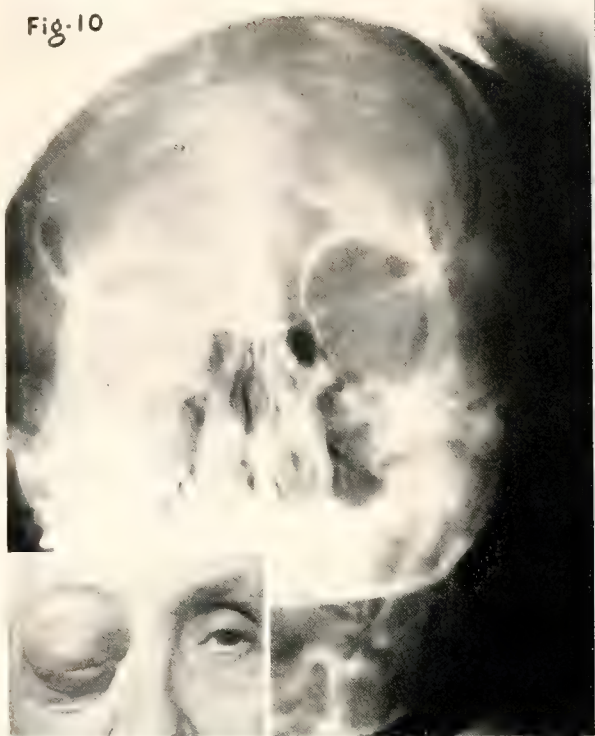


Fig. 10. Lymphosarcoma of the right orbit, with moderate enlargement of the orbital fossa. Enucleation was performed.

Fig. 11. A 2½-year-old child with a three-month history of exophthalmos. The eye was removed, and a retinoblastoma was found. The growth recurred rapidly.



Fig. 12 (Case 2). Glioma of the optic nerve, with a moderate degree of exophthalmos. The roentgenogram shows marked erosion of the optic canal.

Fig. 13 (Case 3). Spongioblastoma polare of the optic nerve, with marked erosion of the optic canal. This is a very slow-growing tumor.

Fig. 14 (Case 3). A roentgenogram made five years after removal of the tumor shows almost normal regeneration of the optic canal.

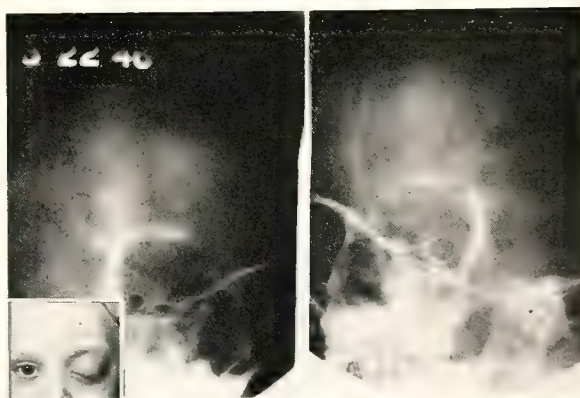


Fig. 13

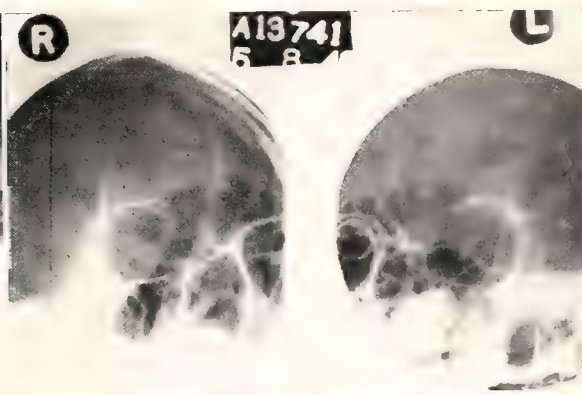


Fig. 14

pressure. Roentgenographically, the sharply punched-out areas of bone rarefaction are typical of this condition (fig. 8 and 9).

Lymphomas and lymphosarcomas (fig. 10) often present no typical picture. We have strongly advocated roentgen therapy to the orbit before enucleation is considered⁽⁵⁾. In many cases, after the eye is removed, a recurrence of lymphoma is found in the other orbit.

In young children, *retinoblastoma* is a fairly common tumor (fig. 11). Films taken to show the sphenoid fissure often reveal calcium deposits in the globe, which give the clue to the diagnosis. The orbit may be removed, but recurrence is usually rapid.

In *glioma* of the optic nerve or chiasm, roentgenography is most important. The finding of an enlarged optic canal is diagnostic if retinoblastoma and neurofibroma have been excluded. In this condition routine films of the optic foramina show a concentric enlargement due to the pressure erosion.

Case 2: A 5-year-old white girl was brought in for examination because of prominence of the left eye (fig. 12), and gradual loss of vision. The disc showed marked atrophy. At operation a tumor was found infiltrating the optic nerve; it did not extend into the orbit, however. The tumor was removed from the nerve and the eye was left intact. The pathologic diagnosis was "glioma, optic nerve."

Another similar tumor, *glioblastoma* (spongioblastoma polare), presents the same type of exophthalmos. The optic canal is similarly eroded.

Case 3: A 3-year-old colored girl was brought for examination because of unilateral exophthalmos of eight months' duration. The eye was rotated outward and downward (fig. 13). Visual acuity could not be determined. The roentgenogram showed marked enlargement of the optic foramen. The eye

was enucleated and a tumor measuring 1.5 by 3.6 cm. was found infiltrating the optic nerve. The pathologic diagnosis was "spongioblastoma polare of the optic nerve." Another roentgenogram made five years later showed almost normal regeneration of the optic canal (fig. 14).



Fig. 15 (Case 4). Basal cell carcinoma producing erosion of bone above and just lateral to the left orbit and involving the lateral portion of the frontal sinus on that side. The area is fairly well circumscribed and there is no unusual amount of reaction surrounding it. The rim of the orbit in this area, as well as the lateral and inferior walls, is involved. There appears to be some erosion of the upper wall of the left antrum, but it is not entirely destroyed. The left malar bone is almost completely destroyed.

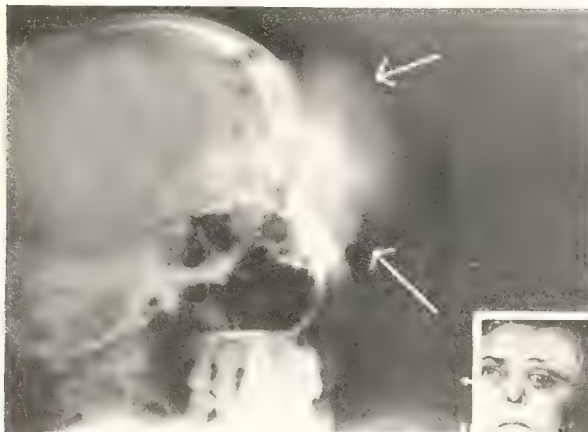


Fig. 16. Carcinoma of the skull, possibly metastatic. The roentgenogram shows extensive bone destruction as well as a soft tissue mass.

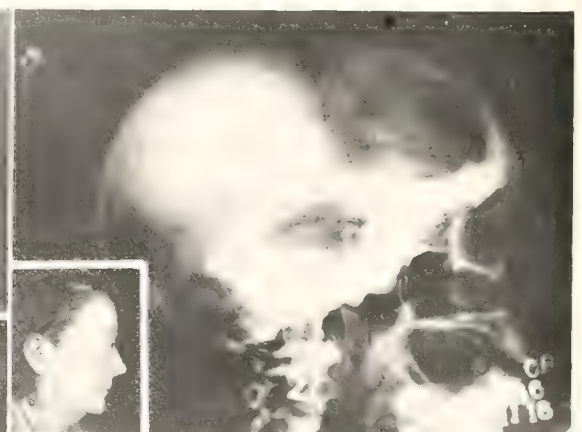


Fig. 17. Meningioma of the sphenoid ridge extending into the posterior orbital wall. The roentgenogram shows marked condensation of bone.



Fig. 18 (Case 5). Unilateral exophthalmos secondary to hyperthyroidism.

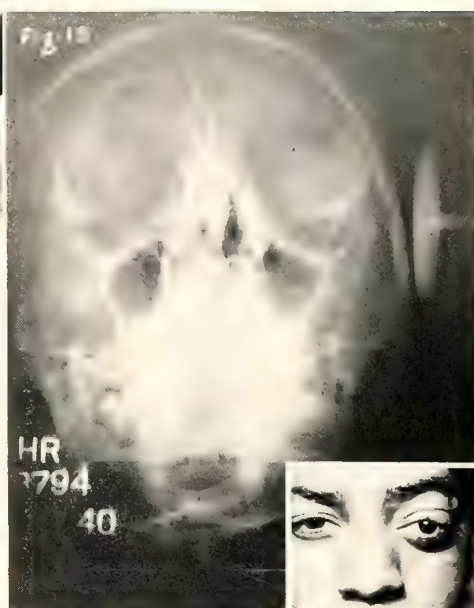


Fig. 19 (Case 5). The same patient five years after thyroidectomy. Most of the exophthalmos has disappeared. There are no intra-orbital changes.

Advanced basal cell *epithelioma* extending into the orbit may produce erosion of bone which may be recognized roentgenographically (fig. 15).

Case 4: A 65-year-old woman was seen in 1942 for treatment of an ulcerating mass under the left eye (fig. 15). She had had a tumor mass beneath the eye for eight years, but only during the past year had it extended into the eye. A biopsy showed a basal cell epithelioma, and roentgen therapy (4000 r) was given. She returned three years later complaining of a hole in the floor of the orbit extending up along the lateral wall. The eye was enucleated and malignant tissue removed.

Metastatic carcinoma around the orbits often produces exophthalmos. These lesions usually are rapidly growing and are fairly radiosensitive (fig. 16).

Meningioma arises in the arachnoid. It is frequently located in areas around the orbit, where the tumor may involve the optic nerve, the sphenoid ridge, the tuberculum sellae, and the olfactory groove. Meningioma displays a tendency to produce hyperostosis, which in turn may cause exophthalmos (fig. 17). Hyperostosis is particularly common in meningioma of the sphenoid ridge.

Hyperthyroidism

Case 5: A 13-year-old colored girl was seen in 1938 complaining of increasing exophthalmos of three years' duration (fig. 18). She had been struck in the eye by a stone four years previously. On admission the basal metabolism was +26. Thyroidectomy was performed, and three years later the metabolism was -5. There had been considerable reduction in the degree of exophthalmos (fig. 19).

Conclusion

Trauma, inflammatory conditions, and tumors are the three most frequent causes of unilateral exophthalmos. Roentgenography is of considerable aid in the diagnosis of tumors within the orbit. In most cases of unilateral exophthalmos, however, the greatest value of the roentgen ray is in eliminating extra-orbital conditions as possible causes of exophthalmos.

Discussion

Dr. Guy Odom (Durham): There are a great number of cases of unilateral exophthalmos in which the x-ray examination does not reveal any definite changes whatsoever. I'd like to ask Dr. Reeves whether he has any information on the percentage of cases in which a diagnosis can be made by x-ray.

Dr. Reeves: I would say that in only about 25 to 30 per cent of the cases can we make a definite x-ray diagnosis. I am not sure that the percentage would run that high if we didn't see the patient or know anything at all about the history. If we knew nothing about the case at all except the x-ray findings, mucocoeles and some of the optic foramen lesions are probably about the only ones in which we could attempt to make a diagnosis.

Humanity has always shunned responsibility. Even today, though there is widespread intellectual acceptance of the concept that much disease is preventable, the emotional attitude is not much altered and illness is considered an intrusion, a misfortune due to factors beyond control of the individual. As a whole we have not yet awakened to the idea that the health of men and women is their own responsibility.—Edward J. Stieglitz, M.D., *A Future for Preventive Medicine*, The Commonwealth Fund, 1945.

CHANGING CONCEPTS IN THE TREATMENT OF TOXIC GOITER

RUSSELL O. LYDAY, M.D.

GREENSBORO

Although numerous surgeons on this continent have made valuable contributions to thyroid surgery, the names of W. S. Halsted and C. H. Mayo are synonymous with the early development of goiter surgery in America. Halsted's "Operative Story of Goitre"⁽¹⁾ is considered one of the most complete historical works on this subject.

Anoci-Association

Motivated by the tragedies that had occurred during and following operations for severe hyperthyroidism, Dr. George Crile, Sr., in 1912, instituted a form of attack known as anoci-association. Light nitrous oxide-oxygen anesthesia was given to the patient in his room to determine how much, if any, reaction occurred. Later a polar ligation was carried out, or possibly one lobe resected, and so, by stages, a bilateral resection was accomplished. Dr. Crile's reputation as a goiter surgeon and the success he attained with this method are proof that it was an important contribution to the surgical treatment of hyperthyroidism.

Iodine

In 1922 H. S. Plummer proved the value of administering iodine preoperatively to patients with hyperthyroidism. This development was indeed a forward step. Many patients who were unable to withstand an operation, even in multiple stages, without great hazard, could be prepared in two or three weeks for a one-stage procedure. Following this treatment the incidence of polar ligations for primary hyperthyroidism dropped to a very low level, as did the mortality in this disease.

For the succeeding twenty years iodine solutions, x-ray irradiation, and boiling water injections were used to prevent reactions from operations on patients with toxic goiter. Some of these measures, alone or in combination, were employed with the

hope of curing thyroid disease without surgery. Isolated instances of prolonged remissions and apparent cures were reported, but the value of these methods as curative agents has never been fully accepted.

As valuable as iodine is in the preparation of patients with toxic goiter for operation, some individuals, in my experience, do not respond satisfactorily to this drug. This failure of response is by no means limited to that group of patients who have taken repeated courses of iodine and are considered "iodine-fast."

Thiouracil and Propylthiouracil

In 1942 another era dawned as the result of Astwood's work with thiourea and thiouracil. Although these anti-goiter drugs are fraught with danger because they may produce neutropenia and agranulocytosis, his work is monumental.

Bartels and Bell have reported on the use of thiouracil at the Lahey Clinic in the preoperative treatment of 400 patients with severe hyperthyroidism⁽²⁾. In this series there was one postoperative death and one death from agranulocytosis due to the drug. These authors stated emphatically that, irrespective of the type and severity of the hyperthyroidism or the physical depletion of the patients, they were all restored to a normal state of health before operation. This was indeed encouraging news to the surgeon who must deal with severely toxic and thyrocardiac patients with serious complications.

Recently, propylthiouracil has been more generally employed in the preparation of patients with toxic goiter for operation and as a curative agent in selected cases of primary hyperthyroidism. It appears to be a valuable drug, when used alone or in combination with iodine, in aged patients with complications that render operation inadvisable or impossible. Bartels has reported a series of 300 cases treated with propylthiouracil⁽³⁾. Only one non-fatal case of agranulocytosis developed in this large series. Clinicians from other medical centers have reported similar results.

Although thiouracil and propylthiouracil produce hyperplastic changes in the gland,

Read before the Section on Surgery, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 14, 1947.

1. Halsted, W. S.: The Operative Story of Goitre, Baltimore, Johns Hopkins Press, 1919.

2. Bartels, E. C. and Bell, G. O.: Thiouracil: Preoperative Use in 400 Patients with Severe Hyperthyroidism, Western J. Surg. 55:39-49 (Jan.) 1947.

3. Bartels, E. C., in paper read before the Am. Assoc. for the Study of Goiter, Atlanta, Ga., March, 1947.

the formation of thyroxin is decreased. Therefore the hyperthyroidism gradually subsides, with a parallel lowering of the basal metabolic rate. Myxedema may result from the continued use of thiouracil, but it has been reported that this condition does not develop with the prolonged use of small doses of propylthiouracil.

My experience with thiouracil covers a period of almost three years. It has enabled me to operate successfully upon cases which I previously considered inoperable, and to perform in one stage a radical resection that would have required multiple stages with iodine preparation alone. During this period no serious reactions to the drug have been encountered. Even though I have used thiouracil almost constantly since July, 1944, it has been administered, with a few exceptions, only to those patients who did not respond satisfactorily to iodine.

For the past five months I have been using propylthiouracil. I have observed, as others have pointed out, that its action, even in doses of 200 to 300 mg. daily, may be slower than that of thiouracil in the recommended dose of 600 mg. daily. It is a general observation that patients with secondary hyperthyroidism, or with toxic adenomatous goiter, require a longer period of treatment with these antithyroid drugs than do patients with exophthalmic goiter. At the present time many clinicians are combining iodine with propylthiouracil from the beginning, lest the severely toxic patient develop a crisis during the early stages of treatment with this drug.

Radioactive Iodine

Another antithyroid preparation, radioactive iodine, is now being used both in selected cases of hyperthyroidism and in thyroid malignancies. In a series of 22 patients with hyperthyroidism Chapman and Evans⁽⁴⁾ found that this substance destroyed the parenchyma of the thyroid gland in six to eight weeks. Seidlin, Marinelli, and Oshry⁽⁵⁾ found it to be an effective therapeutic agent in controlling multiple functioning metastatic lesions in cases of adenocarcinoma of the thyroid where x-ray irradiation was ineffective.

4. Chapman, E. M. and Evans, R. D.: The Treatment of Hyperthyroidism with Radioactive Iodine, J.A.M.A. 131: 86-91 (May 11) 1946.

5. Seidlin, S. M., Marinelli, L. D., and Oshry, E.: Radioactive Iodine Therapy, J.A.M.A. 132:838-847 (Dec. 7) 1946.

Surgery

Improvement in the technique of thyroid surgery has kept pace with other advances. Notably through the teachings of Dr. Frank H. Lahey, radical resections can now be performed with less danger of recurrent nerve injury, fewer instances of postoperative tetany, and fewer recurrences.

Summary

1. Iodine remains a most valuable drug in the preparation of the patient with toxic goiter for operation.

2. Our present experience with thiouracil and propylthiouracil indicates that the great surgical hazard can be eliminated in patients suffering from severe hyperthyroidism that cannot be controlled by other measures. If one of these drugs is administered preoperatively in combination with iodine, a more radical and deliberate operation may be performed which will result in fewer complications and fewer recurrences.

3. Thiouracil, propylthiouracil, and radioactive iodine appear to be of value as curative agents in selected cases of toxic goiter.

THE STERILIZATION OF THE MENTALLY HANDICAPPED IN NORTH CAROLINA

WILLIAM P. RICHARDSON, M.D.

State Board of Health

RALEIGH

and

CLARENCE J. GAMBLE, M.D.

MILTON, MASSACHUSETTS

North Carolina is one of the forward-looking states in which sterilization of psychotic, feeble-minded, or epileptic individuals can be carried out in suitable cases at state or county expense. Cases in which there is a hereditary tendency to serious physical, mental, or nervous disease or deficiency are to be reported by the head of any state institution or by the county superintendent of welfare to the Eugenics Board of North Carolina. If, after a careful review, sterilization appears indicated, this is ordered by the Eugenics Board and carried out by the institution or county authorities. Appeal to the courts is possible if the patient or his family disagrees with the recommendation. When it is under-

Table 1
Sterilizations under Eugenic Sterilization Laws
per 100,000 Population

Because of Insanity		Because of Mental Deficiency	
Total to Jan. 1, 1947	In 1946	Total to Jan. 1, 1947	In 1946
Cal. 141	Va. 3.0*	Del. 151	Del. 10.2*
Kan. 116	Cal. 2.4*	S. D. 107	Utah 9.5*
Va. 102	Kan. 2.0*	Cal. 84	Ind. 5.0*
Del. 97	N. H. 1.2*	Ore. 80	Ore. 3.7*
Ore. 59	N. D. 1.0*	Va. 76	N. D. 3.7*
N. D. 56	Iowa 0.9	Utah 66	Cal. 3.6*
N. H. 41	Ga. 0.9	Minn. 62	S. D. 3.4*
Conn. 23	Miss. 0.7*	N. D. 58	Vt. 2.8*
Miss. 22	S. D. 0.5	N. H. 55	Mont. 2.6*
Utah 15	Ind. 0.4*	Vt. 53	Va. 2.2
Iowa 15	Ore. 0.4	Wis. 47	N. C. 2.2*
Ind. 14	N. C. 0.3	Kan. 47	Kan. 2.1*
Minn. 13	Mich. 0.2*	Neb. 41	Ga. 1.2
Okla. 13	Utah 0.2*	Mich. 39	Me. 1.1*
Neb. 11	Minn. 0.03	Ind. 34	Mich. 1.0
N. C. 10		Mont. 33	Neb. 1.0
Mont. 7		N. C. 32	Iowa 0.8*
Mich. 6		Me. 16	Wis. 0.7
Ga. 6		Iowa 11	N. H. 0.6
Ariz. 4		Okla. 11	Miss. 0.1*
Vt. 3		Ga. 10	Minn. 0.03
Me. 2		Conn. 5	
Ida. 2		S. C. 4	
S. D. 2		Miss. 2	
W. Va. 1		W. Va. 0.5	
		Idaho 0.3	
Average for 27 states having sterilization laws 39	0.8*	Average for 27 states having sterilization laws 42	1.8*

*1946 rate greater than 1945.

Compiled from the reports of the Human Betterment Foundation and of Birthright, Inc.
Populations extrapolated from 1930 and 1940 censuses.

stood, however, that tubectomy gives the needed protection without change in sexual characteristics, it is almost invariably welcomed.

Statistics collected by the Human Betterment Foundation of California and by Birthright, Inc.⁽¹⁾, show that there were 1827 sterilizations in North Carolina from the time the law was passed in 1933 until January 1, 1947. The fundamental reason for sterilization was mental disease in 385 cases and mental deficiency in 1214. Of the 105 tubectomies in 1946, 12 were for mental diseases, 83 for mental deficiency, and 10 for other causes.

Comparison with Other States

To compare the extent of the protection which North Carolina has given its mentally handicapped citizens with that in other states, the numbers of sterilizations per 100,000 population have been calculated for each state from which data are available (table

1). In the proportionate number of tubectomies performed because of psychosis, North Carolina, with 10 per 100,000 since the passage of the law, occupies seventeenth place among the states. The corresponding value of 0.3 for the twelve sterilizations in 1946 places the state slightly higher—in twelfth place. In both comparisons, however, the proportionate number of sterilizations for psychosis in North Carolina is less than half of the average for the twenty-seven states which have sterilization laws. A somewhat larger number of insane patients—23—were protected in 1945⁽²⁾.

The number of cases in which the operation was performed because of mental deficiency is much greater—32 per 100,000 since the law was passed, and 2.2 per 100,000 in 1946. The first of these figures is below the average for the twenty-seven states, and gives North Carolina thirteenth

1. Birthright, Inc., Princeton, N. J., Publication No. 5.

2. Richardson, William P., and Gamble, Clarence J.: The Sterilization of the Insane and Mentally Deficient in North Carolina, North Carolina M. J. 8:19-21 (Jan.) 1947.

place; the second is slightly above the average, and gives our state eleventh position. Eighty-three feeble-minded persons were protected in 1946, as compared with 80 in 1945.

Inadequacy of Present Sterilization Program

That the number of operations is inadequate to meet the needs of the mentally handicapped in North Carolina is suggested

by the following considerations. In the bien-nium ending June 30, 1944—the most recent for which statistics are available — North Carolina's three state hospitals reported 2716 first admissions for psychosis and 1231 deaths. The difference of 1485 approximates the number of patients with psychosis who were discharged for the first time. This is more than eighteen times the 79 sterilizations performed in these hospitals during the same

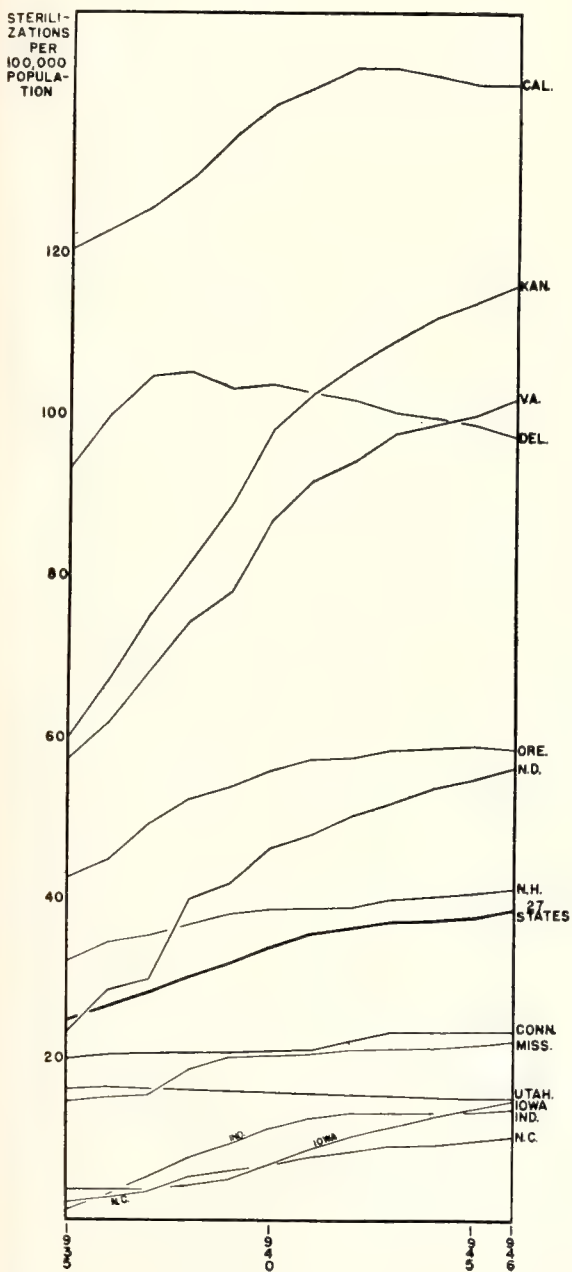


Fig. 1. Sterilizations of the insane reported by state institutions since the passage of the sterilization laws.

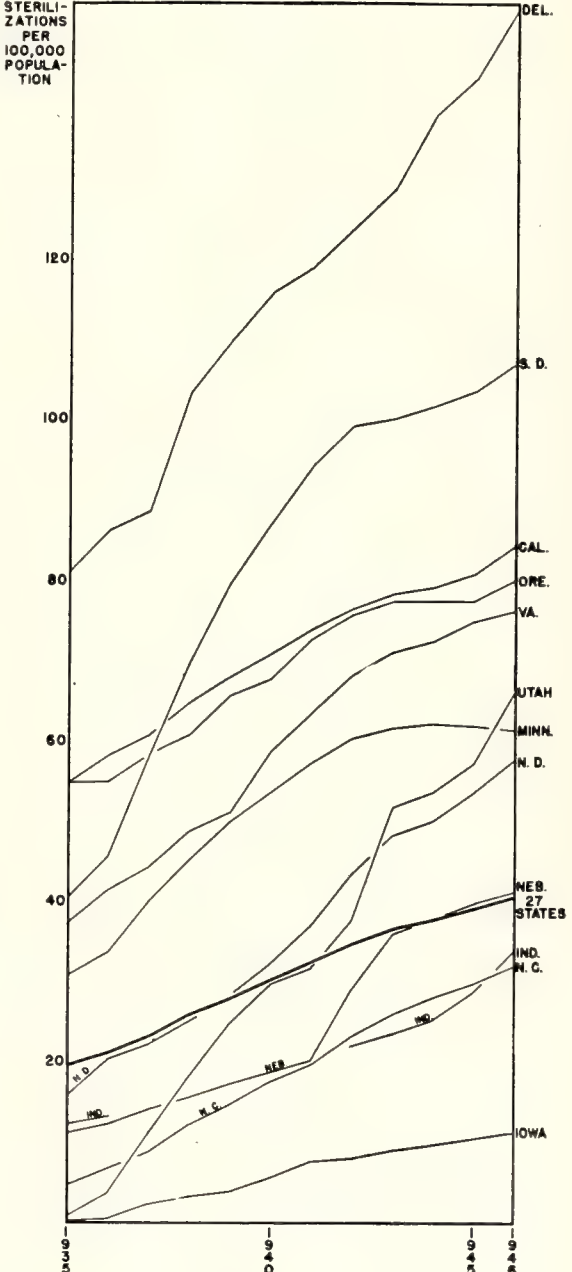


Fig. 2. Sterilizations of the mentally deficient reported by state institutions since the passage of the sterilization laws.

period. While not all the discharged patients were in the fertile age or suffered from a permanent form of psychosis, it is highly probable that more than 1 in 18 should be candidates for protective sterilization.

It is not possible to make a comparable estimate of the problem of the mentally deficient from the population of the Caswell Training School. Because of its limited capacity⁽³⁾ it must care chiefly for the idiots and the imbeciles—persons not apt to become parents. It cannot, therefore, receive for brief periods of training many morons who, if protected from parenthood, might make a satisfactory place for themselves in the community. During the biennium ending June 30, 1944, there were only 58 persons discharged, all of whom had been in the school more than five years and the majority eighteen years or more. During the same two-year period 33 persons were sterilized at the Training School. As in the case of the psychotic patients, age or other considerations may have made sterilization inappropriate for some of those discharged from the Training School.

A more accurate indication of the magnitude of the problem lies in the estimate of a North Carolina Committee on the Problem of the Feeble-minded⁽⁴⁾ that 2 per cent of the state's inhabitants are mentally deficient. This estimate indicates that there are more than 70,000 feeble-minded individuals in the state and that there will be at least 1,400 new cases each year. This number is seventeen times the 83 mentally deficient persons protected by sterilization operations in 1946.

The protection of future generations from the transmission of insanity and feeble-mindedness has seemed so important to the North Carolina legislature that, at its last session, it appropriated funds for a full-time secretary of the Eugenics Board. Miss Elsie L. Parker was appointed to fill this position, and took up her duties on July 24, 1947.

Responsibility of the Medical Profession

A special study of the sterilization problem was recently made in one North Caro-

lina county. This showed that the greatest obstacle to the protection of persons for whom the operation is appropriate is the failure of the patients and their families to understand that the operation has no effect other than the prevention of parenthood. For that failure the medical profession is at least partly responsible. If each physician will let his patients know that sterilization is not castration and does not change sexual functions or reactions, it will greatly facilitate the protection of present and future generations from the perpetuation of mental disease and mental deficiency.

THE USE OF FORCEPS IN OBSTETRICS

W. L. THOMAS, M.D.

DURHAM

Obstetric care properly begins with the first prenatal visit of the patient, and is both prophylactic and remedial. A complete physical examination and history are obtained at the first visit, and impressions are formed concerning the possible necessity for an operative delivery. Good prenatal care with watchful expectancy brings the patient to the time of her labor in the best possible physical condition.

Definition of Terms

After the onset of labor, the physician simply studies the processes of nature and determines when, where, and how he may be of assistance. He must remember that he never can be of "assistance" unless something goes wrong. "Meddlesome" midwifery is mentioned only to be condemned. If the progress of labor goes wrong, he makes up his mind to interfere. Then he studies what he must do, and when he should do it. Any development in the course of labor which demands some form of interference or treatment is called an *indication*. The many features of each obstetric case which determine or specify the nature of the procedure to be done we call *conditions*. A condition, thus, is a prerequisite to be fulfilled before the procedure demanded by the indication can be carried out.

Read before the Fifth District Medical Society, Southern Pines, April 17, 1947.

From the Department of Obstetrics and Gynecology, Duke University School of Medicine, Durham, North Carolina.

3. The realization of the inadequate size of the Caswell Training School led the North Carolina Legislature to make an appropriation for an expansion, which is planned to begin in the near future.

4. Report of the Committee on Caswell Training School in Its Relation to the Problem of the Feeble-minded of the State of North Carolina, Raleigh, 1926.

Broadly speaking, all indications for interference lie in the presence of immediate or prospective danger to mother or child. The conditions will be found in the state of the mother at the time of the intended treatment. Only when the conditions or prerequisites are met should we act. Rarely, the indication may be so strong that it becomes necessary to "force the condition." For example, a woman is bleeding profusely. The indication is to empty the uterus, but the cervix is only one finger dilated. A condition or prerequisite for rapid delivery is a completely dilated cervix; therefore, we must first open the cervix, or choose another procedure such as a cesarean section. A condition which absolutely prevents a given line of treatment is called a *contraindication*.

"Operative Furor"

Obstetric operations require a clear head, a stout heart, and a steady hand. Too frequently they result in irreparable damage to either the mother or the infant. Loss of sleep, sympathy for the patient, and the pleas of an anxious husband or family that something be done wear on the doctor's nerves. These factors, plus a tremendous urge that De Lee calls "operative furor," deprive him of his judgment, and his only thought is to pull out the child regardless of everything else. I believe that most of us have experienced this operative furor, with resulting damage to the infant or mother, or both. I have been forced to fight this frenzy to operate, and have been greatly helped by two Latin mottoes which are painted on the walls in the delivery rooms of the Chicago Lying-In Hospital: "*Primum Non Nocere*" (first of all no damage) and "*Non Vi Sed Arte*" (not with force but with skill). The obstetric operator must never forget that undue "haste makes waste." Traumatism carries more danger to the infant than does asphyxia in slow delivery.

Do Forceps Have a Place?

Forceps are employed by some men with greater frequency than by others. Some obstetricians consider them a great boon; others call them mutilators. Some writer has stated that if the fetus *in utero* had the ability to protest when a forceps was being applied to his head, he might cry out: "Don't put those mutilators on my head—I'll take my chances on a spontaneous delivery." For-

ceps have a very important place, however, and personally I would not want to practice obstetrics without them. When the indications are present and the conditions or prerequisites met, the use of forceps can be extremely helpful. Forceps delivery must be carried out with art and skill, not by force.

Indications

There are two broad indications for the application of forceps—maternal distress and fetal distress. More specific indications are:

1. Failure of the natural expulsive forces after full dilatation and retraction of the cervix—for example, when no progress is being made with the head on the perineum or arrested in the mid-pelvis for one to two hours in the transverse or occiput posterior position.
2. Slight degrees of cephalo-pelvic disproportion.
3. Maternal toxemia, heart disease, tuberculosis, uterine inertia, and other diseases where it is desirable to eliminate the effort and work of the second stage of labor.
4. Maternal distress as manifested by accelerated pulse, rising temperature, marked and rising contraction ring, and tonically contracted uterus.
5. Previous cesarean section.
6. Prematurity; forceps should be used prophylactically to prevent trauma to the infant's head in the birth canal.
7. Fetal distress, as shown by:
 - a. Consistent slowing of the heart rate (below 100).
 - b. Consistent acceleration of the heart rate (above 200).
 - c. Consistent irregularity of the heart rate.
 - d. Passage of meconium. Meconium-stained amniotic fluid does not mean fetal distress.

Contraindications

1. Monsters—hydrocephalus, anencephalus, and so forth.
2. Dead infant and cephalo-pelvic disproportion.
3. Marked cephalo-pelvic disproportion.
4. An environment which precludes asepsis.

Prerequisite conditions

1. The head must present; the only ex-

ception is where forceps are employed to deliver the after-coming head in a breech presentation.

2. The head must be engaged—that is, its greatest diameter must have passed the superior strait. The use of forceps with an unengaged head is criminal.
3. The cervix must be completely dilated and retracted, so that no part of it can be felt when a vaginal examination is made.
4. The membranes must be ruptured.
5. There must not be too great disproportion between the infant's head and the pelvis.
6. Ideally, the bladder and rectum should be empty and the patient properly anesthetized.
7. The operator must have a thorough knowledge of the instrument.
8. A careful and thorough pelvic examination must be made before application to ascertain the position and station of the head.
9. Rigid aseptic techniques must be observed.

General Types of Forceps Operations

1. Outlet, low, or perineal forceps. The station of the head is 4 to 5 cm. below the ischial spines.
2. Mid-forceps. The greatest circumference of the head is in the mid-pelvis, or just below.
3. High forceps. The greatest circumference of the head is just below the superior strait, the station is 1 to 3 cm. above the ischial spines. I cannot recall that a high forceps delivery has ever been performed at Duke Hospital. We prefer internal podalic version with breech extraction.

Technique for the Application of Forceps

It is always a good policy to "practice in the air," so to speak. The ideal application is a cephalo-pelvic one. The forceps should be held in front of the perineum in the position you wish to have them inside the pelvis.

There are two good general rules or laws for applying forceps, which I shall designate as the "Law of the Forceps" and the "Rule of the Forceps." The Law of the Forceps states that the front of the blades must go to the point of direction. The front of the blades is the concave surface of the narrow

tips of the blades. In occiput anterior and transverse presentations, the point of direction is the occiput; in posterior occiput positions, the forehead becomes the point of direction.

The Rule of the Forceps is that the left blade is first taken in the left hand and applied to the left side of the pelvis, and the right blade is then taken in the right hand and applied to the right side of the pelvis. The only time that this rule is broken is in a right occiput transverse position, where the right, or posterior, blade is applied first.

After the forceps are applied, a trial pull should be made to make certain that there is no slipping of the blades on the head. Traction should then be applied in such a way as to mimic normal labor—a gradual, sustained pull for one to two minutes, with gradual release and rest for one to two minutes to allow circulation to return to the brain of the infant. Never forget for one minute that what you have between those two steel blades is a friable brain. Pull in the direction of the birth canal, remembering the "curve of Carus." A traction bar should be used in mid-forceps deliveries. If it takes nature one or two hours to complete the second stage of labor, why should you try to deliver the head with one fell swoop?

When rotation is indicated, try manual rotation first and then apply the blades. It is amazing how easy manual rotation may be in comparison to forceps rotation. When a forceps rotation is necessary, try a "push-turn-pull" or a "push-pull-turn" maneuver; never churn the baby's head up and down. If the head does not rotate through the shortest distance anteriorly with ease, try the longer, 145-degree rotation. Don't get operative furor! Never compress the handles. Use the finger hooks for traction.

After the completion of an operative delivery (anything but the so-called prophylactic perineal or outlet forceps) palpate and inspect the entire birth canal for damage.

Finally, while managing the third and fourth stages of labor, or in the dressing room, carry out the profitable procedure of reflection. Review the case and consider the result; examine yourself to see if your judgment has been good, your technique perfect. Then decide what you would do in a similar case or if the same woman became pregnant again.

THE RADIOLOGIC DIAGNOSIS OF PERICOLITIS AND PERICOLONIC MASSES

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and

THOMAS A. MURRAH, M.D.

CHARLOTTE

In any diagnostic problem referred to him, the radiologist should attempt to determine whether or not an abnormality or pathologic lesion exists, and, if so, where it is located and of what nature it is. In some diseases the radiologist can contribute nothing to the diagnosis; in others, the accuracy of roentgen study is quite high. Between these two extremes lie those conditions in which the radiologist can contribute evidence pointing toward the correct solution, or can exclude a tentative diagnosis by the demonstration of normal roentgen findings.

The colon, except for its extreme distal portion (rectum and rectosigmoid), is within the radiologist's realm. It is his duty to diagnose anomalies, foreign bodies, tumors, diverticular pockets, ulcerations, polyps, inflammations, and strictures resulting from previous disease. In addition to the intrinsic lesions of the colon itself, it is often possible to show disease beginning in the colon but extending beyond its confines. At other times, by using the barium-filled colon as an anatomic landmark, the radiologist may demonstrate disease adjacent to the colon, but not primarily in it.

Anatomy of the Colon

The colon is largest in the cecum; it gradually diminishes in size until the rectosigmoid is reached, and then enlarges again into the rectal ampulla. The cecum lies in the right lower quadrant and is subject to pressure or involvement by any of the diseases in this location. The ascending colon continues upward from the cecum and ends at the hepatic flexure. The hepatic flexure has no firm attachment above, and its position varies. The transverse colon has a long mesentery, and traverses the abdominal

cavity to end at the splenic flexure, which is suspended by the phrenico-colic ligament.

The hepatic flexure lies between the duodenum medially and the anterior margin of the liver or side wall of the abdomen laterally; above, it corresponds to the colon impression on the liver; and posteriorly, it rests on the kidney. The transverse colon normally crosses the second portion of the duodenum and the head of the pancreas. It lies behind the greater omentum. It is in relation to the liver, gallbladder, stomach, body of the pancreas, and spleen. The splenic flexure is well behind the stomach and in contact with the lower part of the spleen. The upper part of the descending colon is in contact with the lateral border of the upper pole of the left kidney.

Case Reports

The following cases illustrate the roentgen diagnosis of pericolicitis and pericolic masses.

Case 1

A 63-year-old man was admitted with the chief complaint of pain in the left side. Palpation of the abdomen disclosed an acutely tender mass the size of a grapefruit in the left mid-abdomen. The leukocyte count was 20,000 and the patient had a septic type of fever. A barium enema (fig. 1) showed numerous diverticular pockets and irregularity in the sigmoid. The barium extended outside the lumen into sinus tracts. Operation was refused, and the patient was discharged with a diagnosis of diverticulitis and pericolicitis.

At a later admission, the mass in the left side of the abdomen was found to have increased in size. Sinus and fistulous tracts had increased in both length and number. At operation the entire descending colon, the omentum, and a small portion of the small bowel were found to be involved in an inflammatory mass occupying almost the entire left side of the abdomen.

Case 2

A 54-year-old man was admitted with numerous fistulous tracts in the region of the right iliac crest. For several months before admission he had experienced intermittent attacks of cramp-like pains in the lower right quadrant of the abdomen, and finally noted a swelling in this area. At another hospital an abscess was drained and healed uneventfully. Shortly after this occurrence, the fistulous tracts developed. By injection of the tracts with lipiodol, connection with the bowel was demonstrated. A barium enema and small-bowel studies (fig. 2) revealed an ileitis with numerous tracts and distortion of the terminal ileum and cecum.

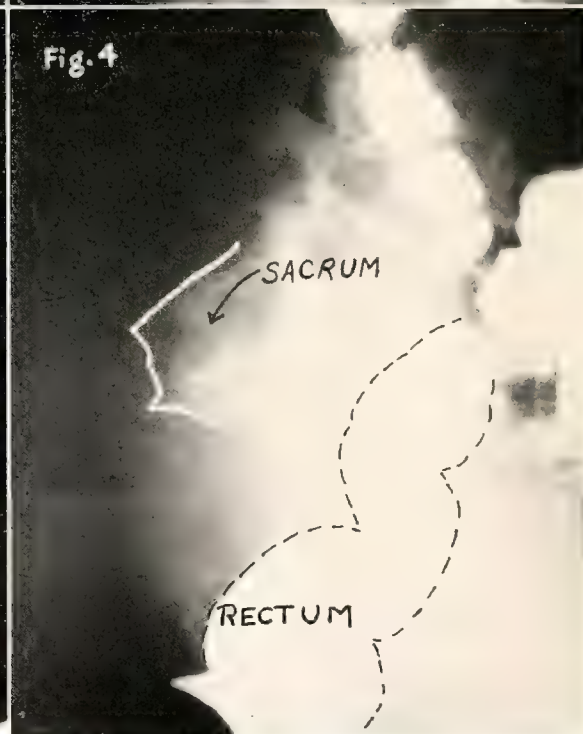
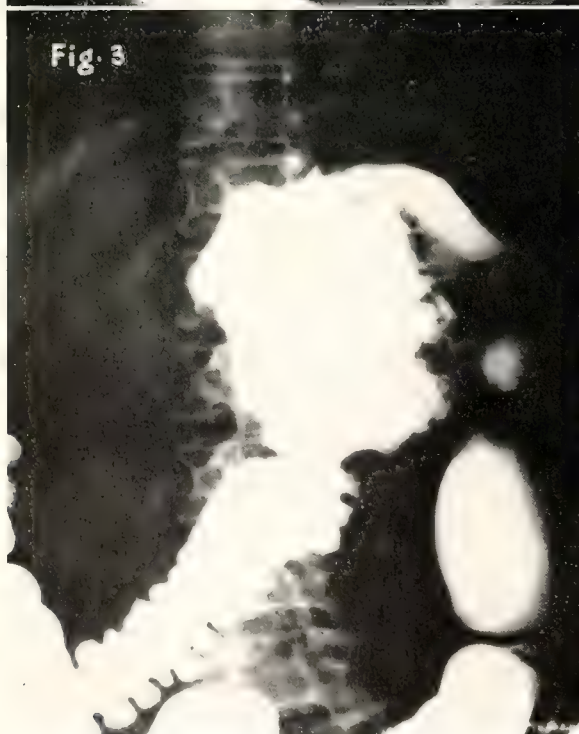
Case 3

A woman, aged 56, had, for several months before admission, complained of vague and indefinite discomfort in the left upper quadrant of the abdomen. Although the discomfort seemed to be radicular in type, neurologic and orthopedic studies failed to show a cause for the pain. Roentgen examination of the stomach demonstrated irregularity along the

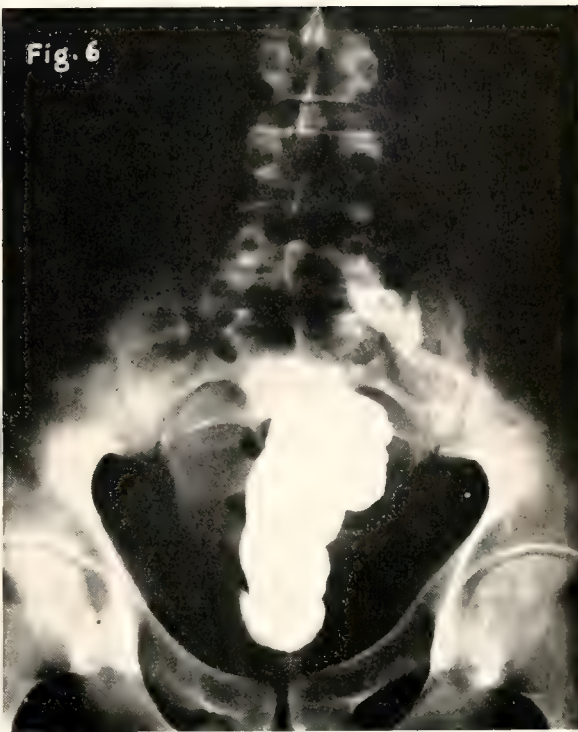
Read before the First General Session, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 13, 1947.

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Because of an error in photographing the x-ray from which figure 1 was made, the sigmoid appears on the right side rather than the left.



greater curvature, with a pressure defect at this site. A barium enema (fig. 3) revealed a large, grapefruit-sized cavity in the distal transverse colon. The colon proper could not be followed through this mass. The radiologic impression was pericolic abscess.

At operation a carcinoma of the splenic flexure with a large pericolic abscess was found.

Case 4

A 73-year-old woman was admitted because of increasing constipation of three years' duration. X-ray views of the pelvis revealed absence of the lower half of the sacrum and the entire coccyx. There was a soft-tissue mass in this area, pushing the barium-filled rectum to the right and forward (fig. 4). The radiologic impression was chordoma or chondrosarcoma.

At operation a large chordoma was found.

Case 5

A man, aged 39, was admitted because of pain and a mass in the right abdomen of three weeks' duration. It was doubtful that he had had fever prior to admission, but in the hospital he did show a low-grade fever. A right retrograde pyelogram showed the upper urinary tract to be normal, with no stones. A barium enema (fig. 5) revealed a concentric filling defect in the opaque column in the upper ascending colon. At operation a large perinephritic and pericolic abscess was found.

A subsequent barium enema revealed the colon to be normal.

Case 6

A 34-year-old man was first seen on April 26, 1946, because of addiction to opiates. The addiction is explained by the following story: In August, 1943, a fellow worker thrust the spout of an oil can up his rectum. Although there was no immediate pain, he soon noted slight pain in the lower rectum, together with a continuous urge to defecate. He was admitted to a local hospital because of continued and increas-

ing pain. A barium enema was made, with equivocal findings. Sigmoidoscopic examination revealed narrowing at the apex of the rectum. At operation a mass was found at the apex of the rectum, and a diagnosis of carcinoma was made. A colostomy was performed, but no biopsy was made.

Following this operation, the patient was in and out of numerous hospitals, and was discharged each time with a diagnosis of carcinoma of the rectum. This diagnosis was evidently made on the basis of rectal examination only. During this time his consumption of opiates increased gradually.

When he was admitted to Memorial Hospital, a firm mass was palpated low in the left side of the pelvis. An x-ray of the pelvis (fig. 6) revealed barium in the rectum. This was evidently the hard mass that previous investigators had called carcinoma. It had been present since the barium enema was done in 1943—approximately two and a half years. By repeated oil and soap enemas, and with digital manipulations, this barium mass was removed. The patient's symptoms were relieved following this procedure.

A subsequent barium enema failed to reveal a lesion within the lumen of the rectum and sigmoid colon up to the distal colostomy stoma. At operation the mass in the left pelvis was found to be an encapsulated oil granuloma. A facetious pathologic diagnosis was "3-in-1 Oil granuloma."

Summary

The anatomy of the colon has been discussed, and cases have been reported to illustrate (1) lesions beginning in the colon and extending beyond its confines; (2) lesions adjacent to or involving the colon, but not primarily in it; and (3) that the barium-filled colon can be used as an anatomic landmark.

IRRADIATION FOR LYMPHOID HYPERPLASIA AND ALLERGIC BRONCHIAL ASTHMA

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X-Ray Therapy for Asthma and Hay Fever

In 1921 S. Gilbert Scott⁽¹⁾, a British physician, discovered that some patients with cancer of the breast who also had bronchial asthma were relieved of their asthmatic symptoms after radiation therapy. In 1926 the same author reported 21 cases of chronic asthma treated by radiation over a period of two and one half years⁽²⁾. He stated that the therapy was of definite palliative value, and believed that the poor results reported by many who had tried this method were caused by failure to use radiation over a large enough field. Since this time numerous physicians have used radiation therapy for allergic diseases, especially asthma. The results have not been consistent, and the method has never attained great popularity.

In 1925 Müller⁽³⁾ reported 22 cases of bronchial asthma treated by roentgen rays. Improvement occurred in 77.4 per cent. He believed, as do other writers, that better results are obtained by using radiation not only over the lung fields, but over several different organs, widely separated. It appears, therefore, that the results are probably due to effects upon the blood, and are not dependent on a specific substance generated from any one organ after radiation.

In 1931 Schreus and Willms⁽⁴⁾ reported good results in 75 per cent of their hay-fever patients treated with x-ray. Apparently this method of therapy acts in part as a desensitizing agent to the mucous membranes.

Crain⁽⁵⁾ stated that x-ray therapy in 44 cases of asthma and 16 of hay fever was successful in 45 per cent of the asthmatics and in 50 per cent of the hay-fever patients.

Rackemann⁽⁶⁾, in summarizing the work of several observers, found that the percentage of good results from the use of x-ray in all forms of asthma varied from 12 to 75. He stated that he had advised x-ray therapy in only a few cases. Unger⁽⁷⁾ found that a few patients are benefited, but that the benefit is usually temporary, lasting only a few weeks to a few months. The main contraindication to the use of x-ray therapy is pulmonary tuberculosis.

Hull, Balyeat, and Chont⁽⁸⁾ have used radiation therapy over the chest and sinuses in asthmatic patients with evidence of sinus disease. By this means they have been able to control asthma in patients who had not responded to other means of treatment. Evidence is accumulating that x-ray therapy is of definite value in cases of asthma associated with infection of the sinuses or bronchial tree. As most chronic asthmatics have infection in one of these organs, the roentgen treatment of asthma is assuming more importance.

Radiation Therapy for Lymphoid Hyperplasia

Radiation therapy, either by roentgen rays or by radium, is of definite value in treating hypertrophied lymphoid tissue in the nasopharynx, whether it is due to chronic infection or to allergic hyperplasia. Hyperplasia of lymphoid tissue is one of the chief causes of many ills of the upper respiratory passage—repeated colds, postnasal drip, sinusitis, ear infections, and deafness. Hypertrophy of this tissue in and about the eustachian tube may cause edema of the surrounding mucous membrane, impair ventilation, and damage the middle ear.

Crowe⁽⁹⁾ is the pioneer in using radium for the treatment of hyperplastic lymphoid tissue in the nasopharynx. Fortunately this

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tissue is very sensitive to irradiation, and doses so small as not to impair in any way normal mucous membrane, gland, or cartilage will cause the lymphoid tissue to decrease or disappear. Reduction of lymphoid tissue will help in many cases to control bronchial asthma.

Experience with Roentgen Treatment of Lymphoid Hyperplasia and Asthma at the North Carolina Baptist Hospital

During the war years 150 patients with nasopharyngeal lymphoid hyperplasia and 20 patients with asthma were treated by x-ray at the North Carolina Baptist Hospital. Most of the former group were referred for irradiation because of some defect in hearing, chronic cough, chronic pharyngitis, or repeated respiratory infections. An effort was made to follow up the results of treatment in these 170 cases. Statements were received from 72 per cent of those treated; of this number, 34 per cent stated that they had obtained some relief, 43 per cent that they were greatly improved. Some of these said that they had been completely relieved and had had no recurrence of symptoms. Thirty-three per cent of those reporting had failed to obtain any relief.

Of the 20 asthmatic patients, 10 were private patients who had had a general allergic study. The roentgen treatment was used because they had not responded well to an allergic regimen. One 45-year-old woman obtained great relief from the x-ray treatment and left the hospital in four days after completing therapy. Her improvement lasted for about four months, and she returned in six months and asked for another roentgen treatment. This relieved her in about four days. She was a great deal better for two years, and then returned for another treatment. Since that time she has been decidedly improved. She has remained on an allergic regimen the whole time.

Another 30-year-old woman has obtained relief for a year following x-ray therapy; she too has continued her routine allergic treatment. A 60-year-old man who was seriously ill in status asthmaticus was greatly relieved in forty-eight hours; he left the hospital in one week after completing his roentgen treatment and has been able to carry on his work while continuing treatments for his allergy.

No remarkable results were obtained in any of the other patients. These cases were treated by the latest accepted method, with a large field of radiation and small dosage. There were no serious ill effects in any of the patients. X-ray therapy used for the lymphoid tissue caused a few to complain of dryness of the throat for a few days, but this soon cleared up. Most of the asthmatic patients complained of some malaise—in most cases for about twenty-four hours after each treatment; there was some loss of appetite in most of the patients, but none experienced nausea or vomiting, and most of the symptoms disappeared after the first day.

At an orphanage

During the same period 20 children from the Methodist Children's Home in Winston-Salem also received roentgen therapy, chiefly for lymphoid hypertrophy, middle ear infection, and deafness. Of these, 27 per cent improved greatly, 33 per cent were helped to some extent—that is, they have not been sick as often—and 40 per cent seemed to receive no benefit. The older children in this group did not improve as much as did the children from 4 to 8 years of age. It is very likely that if the treatment had been repeated, better results would have been obtained.

Conclusion

Before the real value of irradiation as a therapeutic agent in allergic disorders can be determined, many more cases must be studied. It is, however, an agent well worth further investigation.

Army Medical Department Tests New Wonder Drug

The U. S. Army Medical Department soon will stage the most extensive test yet made of the efficacy of chloromycetin, the only drug thus far discovered which is as effective against certain rickettsial disease-causing organisms as the sulfa drugs and penicillin are effective against bacteria. The test will be made in an effort to stop the spread of the dreaded scrub typhus in the Far East.

Dr. J. E. Smadel, director of virus research at the Army Medical Center, and one of the discoverers of this substance, plans to fly to the Malay States early this spring with a supply of the drug for the treatment of native plantation workers among whom scrub typhus is making serious inroads.

The new drug showed considerable potency against both typhus and scrub typhus organisms in experimental infections of incubated eggs and in animals. It also proved effective against several other maladies due to rickettsia.

LARGE CONGENITAL DEFECT OF THE ABDOMINAL WALL WITH EVENTRATION

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DURHAM

Congenital absence of the anterior abdominal wall, or failure of the wall to close, is admittedly a rarity. Rare things are usually of academic interest only. Congenital eventration, however, is important because it must be recognized by the general practitioner, obstetrician, and pediatrician, and at times by the surgeon. The life of the child, who may be healthy and otherwise normal, depends upon prompt recognition and treatment.

Johns⁽¹⁾ and Jarcho⁽²⁾ have thoroughly reviewed the literature on this condition, which was first described by Lycosthenes⁽³⁾ in 1557. To date, about 102 cases of large defects of the abdominal wall have been reported. There have been many reports of small defects, the majority of which were apparently simple umbilical hernias.

Johns⁽¹⁾ divides all the reported cases into three groups. Group 1 includes 68 cases, all stillborn infants, with complete exstrophy of the entire abdominal viscera, often combined with other abnormalities. Group 2 contains 19 cases of babies who were born alive but were not operated on. It is significant that all died, and equally significant that some survived as long as fourteen days after birth. Certainly it is reasonable to believe that, with such tenacity of life, some of them would have lived had repair been carried out.

Group 3 includes 15 cases in which attempts at repair were made. There were 10 recoveries and 5 deaths. The first successful operation was reported by Hogue⁽⁴⁾ in 1882. The operation was repeated in 1892 and 1903, but not again until 1929. These 15 cases are listed in table 1. The over-all mortality was 33 1/3 per cent.

Incidence

In reviewing the literature it is very diffi-

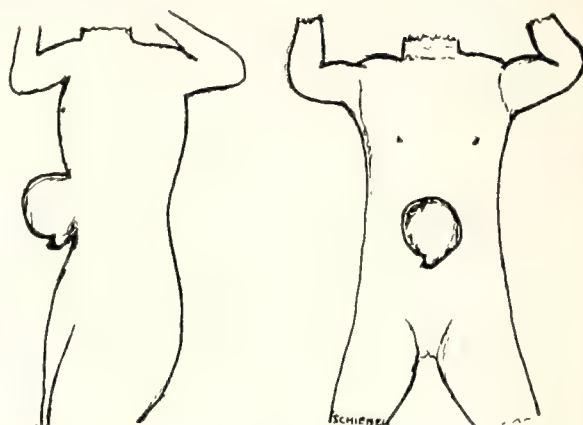


Fig. 1. Sketch showing lateral and anterior views of the defect.

cult to determine the exact incidence of eventration. It is obvious that many reports include herniation into the cord and simple umbilical hernia. True eventration is present only when there is a defect of closure of the abdominal wall. Jarcho⁽²⁾ reported 2 cases in 10,620 births at the Sydenham Hospital, New York. He cited reports in the literature giving an incidence of 2 cases in 9,500 births at Rostow Hospital and 4 in 20,735 births at the Munich Clinic. The present case being reported was the first to occur in 7,525 births. Apparently we can expect such a congenital abnormality about once in every 5,000 births.

Etiology

Several theories regarding the cause of this defect have been advanced. The first was presented by Ballantyne⁽⁵⁾, who thought that it was due to the pressure of the amnion upon the abdominal wall. The second was advanced by Jarcho⁽³⁾, who felt that it was due to failure of the primitive intestinal loop to withdraw into the abdominal cavity. Recently, Politzer and Sternberg⁽⁶⁾ have produced excellent evidence that it is most likely caused by failure of the myotome of mesoblastic origin to spread ventrally from the primitive spine at about the third week.

The covering of the protruding mass is found to consist of peritoneum, a thin layer of Wharton's jelly, and amnion. This material is translucent and moist. The cord

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Table 1
Cases in Which Repair of the Defect Was Attempted

<i>Reported by</i>	<i>Year</i>	<i>Color</i>	<i>Sex</i>	<i>Size of Defect</i>	<i>Time Elapsing between Birth and Operation</i>	<i>Result</i>	<i>Time of Follow-Up</i>
1. Hegue, W. P. Charleston, W. Va.	1882	N.	M.	1" x 1 3/4"	1 1/2 Hours	Living and Normal	8 Years
2. Benedict, S. C. Athens, Ga.	1892	W.	M.	4" Diam.	53 Hours	Living and Normal	3 Weeks
3. Sanderson, S. E. Detroit, Mich.	1903	Not given		Large	24 Hours	Died	24 Hours
4. Caffier, P. Berlin	1929	W.	M.	3" Diam.	Brief Conservative Treatment	Living and Healed	3 Months
5. Gamble, H. A. Greenville, Miss.	1930	W.	M.	3 1/2" Diam.	None	Living and Normal	16 Years
6. Williams, C. Richmond, Va.	1930	N.	F.	3" Diam.	2 Days	Died	12 Hours
7. Jarcho, J. New York	1932	W.	F.	Large	12 Hours	Living and Well	3 1/2 Years
8. Dry, F. M. Illinois	1934	W.	F.	Large	Brief	Died	Same Day
9. Koons, F. W. Kansas	1934	W.	Not given	2" Diam.	Hours	Died	4 Days
10. Johns, F. S. Richmond, Va.	1942	W.	M.	10 x 10 Cm.	1/2 Hour	Living and Normal	3 1/2 Years
11. Watkins Waynesboro, Va.	1943	W.	M.	Slit 1" Long	1/2 Hour	Living and Normal	5 Weeks
12. Marguiles, L.	1944	W.	M.	8 Cm. Diam.	24 Hours	Died	2 1/2 Months
13. Schiebel, H. M. Durham, N. C.	1944	W.	F.	5 Cm. Diam.	1 Hour	Living and Normal	30 Months
14. Marbury, W. B. Washington, D. C.	1945	W.		8 Cm. Diam.	8 Hours	Living and Normal	6 Months
15. McGuire, C. H. Louisville, Ky.	1945			Large	Brief	Living and Normal	1 Year

proper usually comes away at the inferior border of the defect.

Case Report

A white female weighing 7 pounds, 9 ounces, was delivered by Dr. Waldo Boone at 6:44 p.m. on December 27, 1944. The parents were normal, and the family history was negative for any congenital abnormalities. Delivery was normal, following a full-term pregnancy.

I was asked to see the baby at 7:15 p.m. Physical examination showed a newborn infant, normal except for a rounded mass protruding from the abdomen through a more or less circular opening 5 cm. in diameter. This mass increased as the child inspired or cried, and at the same time it would rise 5-7 cm. above the abdominal wall contour. It was covered by a thin, shiny, gelatinous material similar to that on the umbilical cord which came away at the inferior margin (fig. 1). A diagnosis of eventration was made. The area was covered with a

sterile pad, and preparations were made for immediate operation.

The operation was carried out one hour after delivery, under ether anesthesia. The skin was cleansed with tincture of merthiolate and then alcohol. Alcohol alone was used on the gelatinous covering. A circumcision of the cord and gelatinous material was made, cutting a fresh edge of skin. The protruding mass consisted of the right lobe of the liver, the gallbladder, and a part of the duodenum. These organs were all intimately adherent to the gelatinous covering and had to be freed by sharp dissection. The fascia was then exposed in a circular fashion for about 2 cm. Two rows of no. 40 cotton sutures were placed through the fascia, thin muscle and peritoneum, and an overlapping, Mayo-type closure was made from side to side. The skin was closed with no. 60 cotton. All the sutures had to be placed and a gentle pull exerted upon them all before any could possibly be tied. The child returned to the ward in good condition.

The wound healed by first intention, and the patient was discharged on the ninth postoperative day. Sixty days later she returned with a typical intestinal obstruction of twenty-four hours' duration. Immediate operation was performed, and a single adhesive band was found attaching the ileum to a point in the region of the cecum. This was divided, and no other abnormality was found. The wound was closed with cotton sutures. Convalescence was uneventful, the patient being discharged well on the seventh postoperative day.

Summary

1. Congenital failure of closure of the abdominal wall is a rare abnormality.
2. The defect is reparable in at least a third of the cases.
3. The defect should be closed as quickly as possible, as the outcome is largely dependent upon the time elapsing between birth and operation.
4. A case is reported in which operation was successfully performed.

Psychoneurosis versus ethical defection.—With the insight into the nature of courage that our duty overseas had given us, I and many others became convinced that we were now dealing with two large divisions of functional disability. One of these was a disease of psyche, the pathogenesis of which could be traced to evolution of the personality; the other was an ethical defection, loss of military morale. This ethical defect was often indistinguishable from its psychoneurotic counterpart. It mimicked the irresponsible disorders of the mind, resisted psychotherapy and appeared virulently contagious. This amorality of war did not appear to be limited to the psychoneurotic individual, for normal men and women, in and out of military life, appeared tainted with it. Often it appeared to spread from a civilian focus as a secondary, ethical disorder, the complications of which disabled men in a military sense.—Alexander R. MacLean: "No Disease," *Canad. M. Assoc. J.* 56:323 (March) 1947.

Ethical defects concern the whole of our society and people should know the implications of a disorder, bred in the North American continent, which rendered many thousands of men unfit for combat. This problem did not begin with war, nor will it end now that peace is here. When we weigh the social life of the United States in the balance scales of psychiatry and ethics, we can distinguish the same difficulties that beset the psychiatrist in the armed forces. What part did our brand of civilization play in the unwillingness of men to lose their lives in its defence? How much of the abnormalities of behaviour that fill our prisons and divorce courts, and which break our homes, results from irresponsible disorders of the mind, and how much springs directly from moral defects?—Alexander R. MacLean: "No Disease," *Canad. M. Assoc. J.* 56:324 (March) 1947.

Maternal Welfare Section*

The annual report of the Department of Obstetrics of the Charlotte Memorial Hospital gives a comprehensive analysis of the work performed in this department during 1946. It represents a sincere effort upon the part of the staff to learn through a review of their material the exact quality of their obstetric practice. It is a highly commendable approach to any problem which exists. A careful analysis of this type will often indicate unsuspected needs for modification of methods formerly believed to be satisfactory, and will lead to improved results.

The authors of the report hope that it will stimulate interest on the part of other North Carolina hospitals to collect their annual statistics. Many hospitals would be amazed at their high incidence of operative deliveries and cesarean sections if a complete report on their work were prepared annually.

The Maternal Welfare Committee congratulates the Charlotte Memorial Hospital upon this review of their work, made in an effort to determine whether or not it meets the high standards now expected of a maternity service.

* * *

ANNUAL REPORT OF THE DEPARTMENT OF OBSTETRICS OF THE CHARLOTTE MEMORIAL HOSPITAL FOR 1946

SIMON V. WARD, M.D.**

and

O. HUNTER JONES, M.D.†

CHARLOTTE

The authors hope that this report will stimulate other North Carolina hospitals to publish their yearly reports.

I. TOTAL NUMBER OF DELIVERIES 847

A. Private service 693 (81.8%)

Attending staff (8 diplomates of American Board of Obstetrics and Gynecology) 665

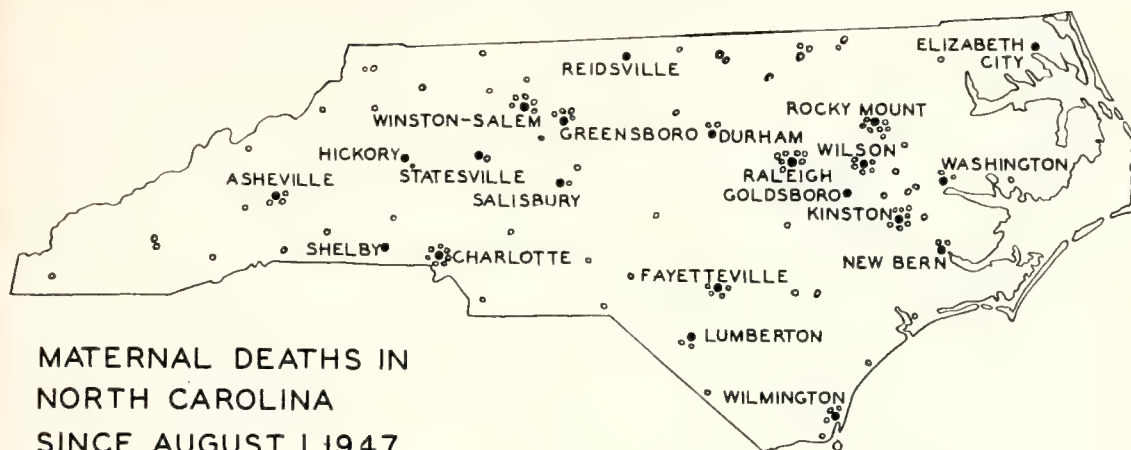
*Prepared for the Maternal Welfare Committee of the Medical Society of the State of North Carolina.

Frank R. Lock, M.D.,
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R. A. Ross, M.D.
R. A. White, M.D.

Resident in Obstetrics and Gynecology, 1946.

† Chief of the Obstetric and Gynecologic Service, 1946.



MATERNAL DEATHS IN NORTH CAROLINA SINCE AUGUST 1, 1947

Courtesy staff (4 general practitioners)

B. Ward service 28 154 (18.2%)

II. TYPE OF DELIVERY

Primiparas 410
Multiparas 437

A. Pelvic deliveries 816 (96.4%)

Episiotomies 665 (81.5%)

Episiotomy breakdown 4

Lacerations 28

First degree 14

Second degree 12

Third degree 1

Urethral 1

1. Cephalic deliveries

(all vertex) 791 (96.9%)

(a) Spontaneous 150 (19.1%)

(b) Forceps 640 (80.9%)

Low (including

"prophylactic

forceps") 581 (90.8%)

Mid⁽¹⁾ 59 (9.2%—or 7.8% of all cephalic deliveries)

High 0

2. Breech deliveries:

25 (3.1%)

Full 2

Frank 17

Footling 6

(a) Type of delivery:

Spontaneous 5

Assisted 5

Extracted 15

With Piper's

aftercoming

head forceps 13

B. Cesarean section

31 (3.6%)

Private service 28 (4%)

Ward service 3 (1.9%)

1. Indications

(a) Cephalopelvic

disproportion 5

With trial

of labor 3

Without trial

of labor 2

(b) Hemorrhage 4

Accidental 3

Placenta praevia

(central) 1

(c) Previous operative procedures 4

Extensive

pelvic plastic 3

Myomectomy 1

(d) Previous sections 9

(e) Other indications 9

2. Type of operation:

Classical 20

Low-flap 11

3. Anesthesia

General (cyclo-

propane usually) 21

Continuous spinal 10

4. Additional operative

procedures 9

Tubal ligation

(Pomeroy technique) 8

Excision of ovarian cyst 1

5. Morbidity (uncorrected)

9

Extrauterine

complications 6

Corrected morbidity 3 (9.7%)

III. POSTPARTAL STERILIZATIONS

(in addition to those done at cesarean section) 32

IV. MATERNAL COMPLICATIONS

A. Maternal mortality⁽²⁾

1 (.12%, or

1.2 per 1000)

B. Maternal morbidity (uncorrected) 59 (7%)

Extrauterine complications 32

Corrected morbidity 26 (3.1%)

Corrected morbidity by months:

Jan.—4.2% May—9.6% Sept.—1.0%

Feb.—4.5% June—2.3% Oct.—2.2%

Mar.—5.0% July—3.8% Nov.—1.1%

April—0 Aug.—3.2% Dec.—1.1%

C. Toxemia of pregnancy

24

1. Eclampsia

2

Intrapartal

1

Postpartal

1

2. Pre-eclampsia

22

D. Hemorrhage

19

1. Accidental

13

2. Placenta praevia

2

Central

1

Marginal

1

3. Third stage

1

4. Postpartal

3

1. Many of the mid-forceps group were low mid-forceps. Actually some were, for all practical purposes, low forceps, but to be technically correct were called low mid-forceps.

2. A history of this case is given at the end of this report.

E. Prolapsed cord ⁽³⁾	2
F. Retained placenta (requiring manual removal)	14
G. Cardiac disease	4
Heart block	1 (maternal death)
Cardiovascular	2
Paroxysmal tachycardia	1
H. Diabetes	3
I. Urinary tract complications (requiring hospitalization)	7
J. Miscellaneous	11
One each of the following: fibroids; cervical polyp; acute gonorrhea; latent syphilis; condylomata acuminata; pelvic thrombophlebitis; laceration of cervix requiring repair; uterus didelphys (?); chronic hypertension; hypoproteinemia; impetigo.	

V. FETAL MORTALITY

A. Total deaths (856 births)	33 (3.9%; corrected, 1.3%)
------------------------------	-------------------------------

Private service	27 (3.9%)
Staff service	6 (3.9%)
Autopsies	16
1. Stillbirths	17 (1.97%)
Non-viable	14
Viable	3 (corrected mortality: 0.4%)
2. Neonatal deaths	16
Non-viable	8
Viable	8 (corrected mortality: 1%)

B. Stillbirths	17
1. Service	
(a) Private	13 (1.6%)
(b) Ward	4 (2.6%)
2. Cause of death	
(a) Congenital abnormalities incompatible with life	3
(b) Congenitally normal	14
1. Non-viable age	4
2. Viable age 10	
(c) Macerated	7
(1) Cause of death undetermined	5
(2) Nephritis, chronic	1
(3) Toxemia of pregnancy and erythroblastosis	1
(d) Not macerated	3 (0.4%)
(1) Death from asphyxia during a difficult mid-forceps delivery; persistent occiput posterior, with prolonged labor (53 hours) and cervical dystocia. (Autopsy)	1
(2) Toxemia of pregnancy	2

3. Both babies survived. In one case the resident did a vaginal examination immediately following spontaneous rupture of the membranes in a multipara with a transverse presentation. He found the cord prolapsed through a partially dilated cervix. A slowing fetal heart rate indicated that the circulation was being embarrassed. He pushed the presenting part up and held it there until the private obstetrician could do an emergency cesarean section, thereby, in all probability, saving the baby's life.

C. Neonatal deaths	16 (1.9%)
--------------------	-----------

1. Service	
(a) Private	14 (2.1%)
(b) Ward	2 (1.3%)
2. Cause of death	
(a) Prematurity	9
(1) Viable	2
(2) Non-viable	7
(b) Cerebral hemorrhage (autopsies)	2
(c) Hemorrhagic diathesis (including adrenal hemorrhage) (autopsy)	1
(d) Cerebral anoxia (due to cord around neck) (autopsy)	1
(e) Atelectasis (cause undetermined) (autopsy)	1
(f) Congenital malformation of heart, incompatible with sustained life (autopsy)	1
(g) Infectious diarrhea	1

VI. PREMATURE BIRTHS⁽⁴⁾ 59 (6.9%)

(2500 Gm. (5½ pounds) or less at birth, as defined by the American Academy of Pediatrics)

A. Service	
1. Private	43 (6.3%)
Mortality	7 (17%)
2. Ward	16 (10.4%)
Mortality	2 (12.5%)

Report of Maternal Death

The patient was a 23-year-old woman from the mountains of western North Carolina. Her two previous pregnancies and deliveries—thirty-six and twenty-three months prior to her present confinement—had been uneventful, and her local doctor stated that there had been no evidence of cardiac pathology during these pregnancies. Two months before the onset of her present pregnancy, she was told by another doctor that her pulse was very slow and her blood pressure low; this is the only clue that the heart block antedated the pregnancy.

A few days before admission to Charlotte Memorial Hospital, the patient consulted her local doctor for the first time during the third pregnancy, at which time she was almost 7½ months pregnant. She complained of progressive dyspnea during the past month. The slow pulse rate was detected and an electrocardiogram was taken which revealed a heart block. The patient was then sent to an internist in Charlotte for cardiac consultation and opinion.

He first saw her on July 31, 1946, in his office, where a complete physical examination was done. This was essentially negative except for the findings pertaining to the heart. Her pulse rate was 40 per minute and regular, her blood pressure 104 systolic, 60 diastolic. The heart was slightly enlarged to the left; a loud systolic murmur was heard over the entire precordium, being loudest just to the left of the sternum at the fourth interspace; both second sounds were accentuated, the pulmonic more than the aortic. Fluoroscopic examination of the chest was not remarkable. The electrocardiogram showed a marked left axis deviation and heart block, with complete auriculo-ventricular dissociation. The ventricular rate was approximately 38.

Urinalysis was negative. The hemoglobin was 75 per cent. red cells 3,400,000, white cells 9,000 with a normal differential.

1. An analysis of this group of cases is published on the following page.

The patient was hospitalized the same day for further study and observation. A few hours after admission, labor began spontaneously, and an obstetrician was called in. The patient had an easy labor of seven hours under excellent Demerol anesthesia. Delivery was spontaneous, almost precipitate, following spontaneous rupture of the membranes. The baby was premature, weighing 4 pounds, 8 ounces, but was vigorous and did well. The patient stood labor and delivery well, with no change in the heart block and with no evidence of decompensation. After delivery her pulse rate was 48 and her blood pressure 115 systolic, 80 diastolic.

Twelve hours after delivery the internist attempted to break the heart block by giving 0.5 cc. of Adrenalin. The pulse rate went to 144 and the patient became extremely apprehensive and complained of difficulty in breathing. These symptoms subsided in a few minutes, and the pulse rate returned to 42. After this it was decided to defer all investigative procedures for several days. The patient felt well thereafter until approximately fifty-six hours after delivery, when the pulse suddenly increased to 120. The patient became faint and cyanotic, then rigid and irrational. The pulse was totally irregular for one minute, then the rate dropped to 40 and became regular. The cyanosis cleared and the patient became rational in three or four minutes. For the next several hours the patient's only complaint was moderate dyspnea.

Sixty hours after delivery the patient was given a low enema. Almost immediately afterwards she went into sudden cardiac and circulatory collapse, and died in a few minutes despite all efforts to revive her.

Since an autopsy could not be obtained, the exact cause of death could not be determined. The clinical diagnosis was rheumatic heart disease with complete heart block.

ANALYSIS OF PREMATURE BIRTHS, CHARLOTTE MEMORIAL HOSPITAL, 1946

CHARLES H. GAY, M.D.*

CHARLOTTE

Total number of births	856
Total number of premature infants	59 (6.9%)
Total number of premature deaths	9
Non-viable	7
(All weighed less than 1.25 Kg. [2¾ pounds], or were born before the twenty-eighth week of gestation.)	
Viable	2 (3.8%)
(One weighed 4 pounds, 5½ ounces, and the other 4 pounds, 9½ ounces)	
Deaths within forty-eight hours	8 (89%)
Deaths after forty-eight hours	1 (11%)

From the Department of Pediatrics, Charlotte Memorial Hospital.

* Chief, Department of Pediatrics.

"If Your Child Stutters"

Copies of the leaflet, "If Your Child Stutters," containing points for the parents of stuttering children, may be obtained by writing to the Speech Information Bureau of the National Hospital for Speech Disorders, 61 Irving Place, New York 3, N. Y.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

DURHAM

II

THE DEVELOPMENT OF ENDOTRACHEAL ANESTHESIA

There are a number of physiologic factors regarding ventilation which directly concern the conduct of anesthesia in the presence of an open thoracic cavity. Recognition of these principles, development of suitable apparatus for their application, and the introduction of a wide variety of anesthetic drugs have made possible anesthesia for intrathoracic surgery as we know it today.

Vesalius in 1542 discovered that inflation of the lungs was necessary to life when the chest was widely opened. He was able to keep animals alive under these conditions by blowing intermittently into a reed inserted into their tracheas. More than a century later (1667), Robert Hooke⁽¹⁾ attached bellows to the distal end of a dog's trachea, which had been bisected just below the epiglottis, and demonstrated that ventilation could be efficient with the lungs maintained in a state of continuous inflation. He concluded that satisfactory ventilation depended not on the movement of the lungs, but rather upon the delivery of a sufficient quantity of "fresh air" to them.

In or before 1858, John Snow⁽²⁾, the first physician to specialize in anesthesia, administered an endotracheal chloroform anesthetic to a rabbit by performing tracheotomy and inserting into the trachea a wide-base tube, through which the animal breathed in and out of a bag filled with chloroform vapor. This was the earliest case of anesthesia through the trachea, and the inauguration of endotracheal anesthesia.

In 1871 the German surgeon, Friedrich Trendelenburg⁽³⁾, used this method in man and made an advance in technique by placing around the distal end of the tube before

1. Hooke, R.: An Account of an Experiment Made by M. Hook of Preserving Animals Alive by Blowing Through Their Lungs with Bellows. Phil. Trans. Roy. Soc. 2:539-540, 1667.
2. Snow, J.: On Chloroform and Other Anaesthetics: Their Action and Administration, London, J. Churchill, 1858, p. 117.
3. Trendelenburg, F.: Beiträge zu den Operationen an den Luftwegen, Arch. f. Klin. Chirur. 12:121-133, 1871.

inserting it a cuff which could be inflated. After inserting the tube into the trachea through the tracheotomy opening, he would inflate the cuff, achieving an absolutely water-tight fit with the wall of the trachea. The tube was connected by a length of rubber tubing to a funnel covered with gauze or flannel. Anesthesia was maintained by dropping chloroform on the gauze.

The first really exhaustive study in endotracheal anesthesia was made by the German surgeon, Franz Kühn⁽⁴⁾. Kühn devised semi-rigid metal tubes which he passed into the trachea either through the nose or through the mouth, using a finger to guide the tube through the larynx. He was aware of the possibilities of using the endotracheal catheter as a very efficient method of controlling the inflation of the lung during open chest surgery. He described an apparatus for the administration of chloroform vapor in oxygen under a positive pressure built up by an artificial and controllable obstruction to the exit of vapor from the system. He suggested a technique of anesthesia which was not applied clinically for twenty years, but is now universally accepted: what is now known as the "carbon dioxide absorption technique." Kühn felt that a completely closed system would be the best method for maintaining intrapulmonic pressure. The machine which was constructed for him closely resembled a modern "circle filter" apparatus and contained two cannisters filled with caustic potash. The valves of the circle filter were so situated that an enormous dead space was present in which the patient's carbon dioxide could accumulate. Because he was uncertain as to the possible chemical reaction between caustic potash and chloroform, Kühn used the machine on experimental animals but never on the human subject.

Matas, in 1901⁽⁵⁾, perfected a modification of the Fell-O'Dwyer intraglottic cannula and insufflating bellows. His modification consisted of an endotracheal tube fitted with a plug to occlude the glottic opening so that positive pressure could be exerted through it, and a side-tube to which was attached a

funnel of the type used by Trendelenburg for the administration of the anesthetic. With this apparatus he was able to confirm the findings of physiologists that a positive pressure of 6-10 mm. of mercury, and usually 8 mm. of mercury, was sufficient to overcome the elastic retractility of the human lung when collapsed by the admission of air into the pleura. He also determined the extent of the traumatizing or pathologic effects on the lung when the positive pressure was carried to excess.

Sauerbruch, in 1903⁽⁶⁾, devised a method for ventilating the lungs by a negative pressure system ("Unterdruck"). In his original experiments the open thorax of a dog was enclosed in a glass cabinet, from which the air was apparently exhausted to produce a negative pressure of 7 mm. of mercury. This simple apparatus was gradually developed through various stages until the final stage was reached with the construction of the elaborate chamber in the Munich clinic. This chamber was large enough to contain a patient and a full operating team. The anesthesiologist remained outside at the patient's head.

In 1909, Meltzer and Auer⁽⁷⁾ showed that if air under some positive pressure were blown into the trachea at its bifurcation, life could be maintained in an animal whose respiratory movements had been suppressed by curare. An endotracheal catheter of narrow hose was used, and the air was allowed to escape between the tube and the trachea. The degree to which the lungs were kept distended obviously depended on the relation between the rate at which air entered through the catheter and the rate at which it could escape through the glottis alongside the catheter. This technique was applied to clinical anesthesia by Elsberg⁽⁸⁾, and has come to be known as "insufflation endotracheal anesthesia." Prior to this time tubes had been passed into the larynx by the sense of touch. Elsberg sought an easier and more certain method of introducing the tube, and found that the use of Chevalier Jackson's laryngoscope provided this⁽⁹⁾.

4. Kühn, F.: (a) Die perorale Intubation. *Zentralbl. f. Chirurg.* 28:1281-1285 (Dec.) 1901; (b) Perorale Tubage mit und ohne Druck. *Deut. Zeit. f. Chirurg.* 76:148-207 (Feb.) 1905; (c) Die perorale Intubation mit und ohne Druck. *Deut. Zeit. f. Chirurg.* 78:167-520 (July) 1905; 81:63-70 (Jan.) 1906.

5. Matas, R.: The Value of Artificial Aids to Respiration in "Acute Operative Collapse of Lungs" (Surgical Pneumothorax) Occurring in the Course of Intrathoracic Operations. *Arch. Surg.* 5:110-133 (July) 1922.

6. Sauerbruch, F., and O'Shaughnessy, L.: *Thoracic Surgery*. Baltimore, Wood, 1937, p. 25.

7. Meltzer, S. J., and Auer, J.: Continuous Respiration without Respiratory Movements. *J. Exper. Med.* 11:622-625 (July) 1909.

8. Elsberg, C. A.: The Value of Continuous Intratracheal Insufflation of Air (Meltzer) in Thoracic Surgery. *Med. Record* 77:193-195 (March) 1910.

9. Elsberg, C. A.: Intratracheal Insufflation Anesthesia, Its Value in Thoracic and in General Surgery. *New York J. Med.* 12:521-528 (Sept.) 1912.

Insufflation necessitated more complicated machinery for maintenance of anesthesia than had inhalation. Moreover, between 1907 and 1918, the value of nitrous oxide in major operations, even if small quantities of ether had to be added to it, was being recognized. The ingenuity of such men as McKesson, Gwathmey, Teter, Foregger, and Connell in this country, and of Bayle, Shipway, Magill, and Rawbotham in England was displayed as they evolved apparatus for the administration of vapors and gases.

Magill and Rawbotham, as a result of their experience as anesthetists during the first World War, advocated a return to the old "inhalation" method of anesthesia. It occurred to them that anesthesia could be more physiologically, as well as more economically, maintained if a wide, bare rubber tube were inserted into the trachea and the patient were allowed to breathe through it in both directions. This arrangement more closely resembled normal respirations than the forcible insufflation of vapors, and the body heat and moisture were better conserved.

The trend from insufflation to inhalation anesthesia received fresh impetus from the introduction of the "carbon dioxide absorption" technique by Waters in 1924⁽¹⁰⁾. When the "absorption technique" is used, the flow of gases is very slow, since an excess of anesthetic vapor need not be constantly wasted merely to act as a vehicle for expired carbon dioxide. Since it virtually depends on respirations in both directions through a canister which contains soda-lime, the absorption technique is the antithesis of insufflation.

In the last decade operations for the treatment of bronchiectasis and chronic pulmonary tuberculosis have become commonplace. The patient occasionally exhibits such a quantity of secretion in the tracheobronchial tree that death by drowning may result unless the secretion can be removed during anesthesia. To meet this difficulty various techniques of drainage by suction, either through or outside the endotracheal tube, have been devised by Magill, Hewer, and others.

A surgeon operating inside the pleural cavity may at times be materially assisted if active respiratory movement can be minimized or abolished intermittently. Such con-

ditions can be provided by the use of the technique known as "controlled respirations," suggested and described by Guedel and Treweek in 1934⁽¹¹⁾.

During the course of operations for lobectomy, infection of the remaining lobe by secretions aspirated from the diseased lobe constitutes a serious risk. Magill and Archibald have each suggested a method of endobronchial drainage designed to minimize this risk. In 1932, Gale and Waters described a method of "endobronchial anesthesia" whereby, during pneumonectomy, anesthesia could be maintained by means of the relatively sound lung, while the lung undergoing operation remained collapsed. More recently, Moody and others have devised a double-lumen balloon-suction catheter for use in pneumonectomies and lower lobectomies.

The advances made in anesthesia for thoracic surgery during the past twenty years have been notable. That entire agreement concerning choice of anesthetic agents and techniques for management of such cases has not been reached is evidenced by the writings of Beecher, Livingstone, Wiggins and Schultz, Moyer, Nosworthy, Neff, Randolph and Kaber, Ester, Bourne, and others. The habit of keeping accurate records of clinical experiences is still too rare among anesthetists. It is to the records which will be kept in the future by the rising generation of anesthetists that we must look for evidence which will enable us to form a more balanced judgment as to the optimum conduct of anesthesia for thoracic surgery.

RUTH MARTIN, M.D.
Duke Hospital,
Durham, North Carolina

11. Guedel, A. E. and Treweek, D. N.: Ether Apnoeas, *Anesth. & Analg.* 13:263-264 (Nov.-Dec.) 1934.

COURSE IN MEDICAL WRITING

Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, will give an instructional course in medical writing at the next annual meeting of the Mississippi Valley Medical Editors' Association, to be held at Springfield, Ill., next September 29 during the annual meeting (Sept. 29, 30, Oct. 1) of the Mississippi Valley Medical Society in that city. No registration fee will be charged to members of the Association.

All interested in knowing more about this non-profit organization, or attending the meeting next September, should communicate with the secretary, Dr. Harold Swanberg, 209-224 W. C. U. Building, Quincy, Illinois.

10. Waters, R. M. and Schmidt, E. R.: Cyclo-propane Anesthesia, *J.A.M.A.* 103:975-983 (Sept. 29) 1934.

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FEBRUARY, 1948

FOR AUTHORS ONLY*

This editorial is written for the exclusive benefit of those who are preparing papers for presentation at the State Society meeting in May, and those who may, at some future date, submit articles for publication in this JOURNAL.

The attention of the former group is first called to two statements in the By-Laws of the Medical Society of the State of North Carolina: (1) "All papers read before the Society shall be the property of the Society" (Chapter X, Section 4); and (2) "No paper shall be received by or read before this Society that has been presented to any other society, excepting only a component or District Society of this State; or that has been offered for publication in any journal. In the case of any paper accepted, the author

is supposed to have invested with the Society all rights to its ownership" (Chapter XI, Section 4).

For the benefit of both groups, an editorial on "The Preparation of Manuscripts," which appeared in the first volume of the NORTH CAROLINA MEDICAL JOURNAL⁽¹⁾, has been re-furbished and is reproduced below. Most of the suggestions contained in it are taken from Dr. Fishbein's book, MEDICAL WRITING⁽²⁾, which is heartily recommended to anyone attempting to prepare a medical paper.

Manuscripts should be typed on stand-ard-size typewriter paper, *double-spaced*, with liberal margins (at least one inch on each side). Single-spaced manuscripts will be returned to the author for retyping. The title of the paper, the author's name, his de-grees, and his address should be given at the top of the first page. If the paper is from a medical school or hospital, the full name of the institution and the department should be given in a footnote, along with the section or society to which the paper is presented and the date of presentation.

References to books and articles, and any other footnotes should be indicated by con-secutive numerals throughout the text and then typed, double-spaced, on a separate page at the end of the manuscript. References should always be given to articles from which a direct quotation is taken or which are used as authority for statement of a fact not generally known. Books and articles not referred to in the paper should not be in-cluded, unless "an exhaustive review of the literature has been made on a subject of sufficient importance to warrant such a sur-vey."⁽²⁾ Such a bibliography is seldom justi-fied.

References will be much more valuable to the reader if they are given in the proper form and contain the full information neces-sary to locate them. For articles, the NORTH CAROLINA MEDICAL JOURNAL follows the form used in the *Index Medicus*, giving, in the following order, the author's surname and initials, title of the article, name of the peri-odical, volume, inclusive page numbers, and date of publication (including the month and, in the case of weekly magazines, date of the month). A complete reference to a book

* Reprinted, with revisions, from the North Carolina Medi-cal Journal for March, 1944 (volume 3, page 106).

1. The Preparation of Manuscripts, Editorial, North Carolina M. J. 1:161-162 (March) 1940.
2. Fishbein, Morris: Medical Writing, Chicago, American Medical Association, 1938.

should contain the author's surname and initials, the title of the book, edition, place of publication, name of publisher, volume (if more than one have been published), and page.

Quotations

Although it should not be necessary to state that all direct quotations from other sources should be put in quotation marks, and that *only* direct quotations, in the exact words of the original, should have quotation marks around them, experience has taught that all too often this first rule of literary etiquette is violated. If any words in a quotation are omitted, this omission should be indicated by a series of dots; if additions are necessary, they should be put in brackets; and *no other changes* should be made within quotation marks.

Tables and Illustrations

Tables and legends for illustrations should be typed on separate sheets of paper. The illustrations themselves, whether mounted or unmounted, may be numbered on the back and simply inserted in the same envelope with the manuscript. Slides and x-ray films do not make satisfactory cuts; glossy prints or black-and-white line drawings clearly lettered are preferable. It is necessary to obtain permission from the author or publisher to reproduce illustrations which have been published elsewhere.

Within the past two years the editorial board of the NORTH CAROLINA MEDICAL JOURNAL has adopted the policy of paying up to \$20 on the cost of cuts for any one article. This amount usually covers the expense of reproducing four to six illustrations, depending on the size and type of cut required. If the author wishes to publish additional illustrations, he may do so by paying the extra cost.

Case Reports

Case reports should be written with the same care that is given the rest of the article. Dr. Fishbein says: "A case report should tell its story in clear, straightforward narrative style. It should not be transcribed word for word from original records that were hastily jotted down at the time the various events occurred; the jerky, telegraphic style of the record sheet may result in actual padding." All irrelevant findings should be omitted, and the tenses should be kept consistent. Care

should be taken to avoid confusion of dates and to make the sequence of events clear.

When the paper has been typed, the author should re-read it carefully, checking on spelling and grammar. Corrections (if they are not too many) may be written between the lines in ink, as legibly as possible.

By following the suggestions given above, any writer will make much easier the work of the JOURNAL's editorial staff.

* * * *

DR. HOLMAN TAYLOR

A familiar figure was sorely missed at the Cleveland meeting of the House of Delegates of the American Medical Association. For thirty-five years Dr. Holman Taylor, secretary of the State Medical Association of Texas and editor of the *Texas State Journal of Medicine* since 1910, had been a perennial delegate from Texas to the A.M.A. His un-failing good humor and his honesty won him the respect of all members of the House, and the friendship and affection of those who knew him well. Veteran delegates will long remember his stentorian self-introduction, "Taylor from Texas," which could be a battle cry or the prelude to a mirth-provoking story or comment.

The end came most fittingly—as the two hundred guests at a banquet given in his honor were filing out of the hotel. He had just responded to the encomiums heaped upon him by saying, "Now I know the difference between a pat on the back and a kick in the pants." He suffered a heart attack just as he was leaving the platform, and died in a few minutes.

The leading editorial in the December issue of the *Texas State Journal of Medicine* closed with the following tribute:

"It is conceded by leaders of the State Medical Association that no man living or dead has been more valuable or has contributed more to Texas medicine than Dr. Holman Taylor . . . Even those who differed with his opinions continued always to respect his honesty and good faith and to appreciate his characteristic enthusiasm, good humor, and colorful speech. Dr. Taylor the man as well as Dr. Taylor the official will be sorely missed."

"Taylor from Texas" will be missed, not only in his native state, but in the whole country. Organized medicine is the better because he lived.

GLORY TO THE GOVERNORS

Those doctors who have kept up with the weekly news letters from Dr. George Lull, secretary of the American Medical Association, may recall that Senator Smith of New Jersey, chairman of the Subcommittee on Health from the Senate Committee on Labor and Public Welfare, sent a letter to the governors of all the states, asking for an opinion on certain points in S. 545 and S. 1320—the Taft National Health Act and the revised Wagner-Murray-Dingell bill respectively. This letter was followed up by one from the executive director of the Democratic National Committee, giving arguments in favor of the Wagner-Murray-Dingell bill and against the Taft bill.

It is cheering to note⁽¹⁾ that Senator Smith received only one reply—from the governor of Utah—favoring S. 1320. Twenty-five governors supported S. 545, eight had no preference, five were not in favor of either, and nine had not replied. Later a telegram from Utah's governor made it clear that there had been a misunderstanding, and that the lone vote for the Wagner-Murray-Dingell bill was withdrawn.

Glory to our governors!

1. Hearings before Senate Committee on Labor and Health, Subcommittee on Health.

* * * *

FEES FOR INSURANCE EXAMINATIONS

It is a matter of common knowledge—and common complaint—that the cost of virtually everything has advanced tremendously within recent years. There is one exception to this rule. That is the fee paid by life insurance companies for medical examinations. This has been “frozen” at \$5.00 from the time when the memory of medical men runneth not to the contrary.

When most policies written were for \$1000 or \$2000, the responsibility placed on the examiner was not nearly as great as it is now, when the value of the average policy is many times that figure. At least one veteran physician has recently resigned as examiner for a number of companies because he found that the time required and the responsibility involved were out of all proportion to the fee paid. Since he had established

a good reputation as an examiner, the agents knew that his reports were seldom questioned. For that reason, he was asked to make the examinations for policies of \$10,000 to \$100,000 or more, while examinations for smaller policies were given to younger men. The same fees were paid for all examinations, although the examination of applicants for the larger policies required more time and entailed much more responsibility.

The greatly lengthened life span now prevailing should add to the already large surpluses of the old line insurance companies. Why should not part of this surplus be used to pay the medical examiner what his services are worth?

* * * *

MULTIPLE SPECIALIZATION

A doctor who attended the Interim Session of the American Medical Association in Cleveland was idly glancing over the Classified Advertising Directory of that city, when his attention was caught by the section devoted to physicians. Following their names, office addresses, and telephone numbers, most doctors had dignified announcements, such as “General Practice,” “Obstetrics and Gynecology,” “Orthopedics,” “Pediatrics,” and so forth. Some used plainer terms, such as “Diseases of Children,” “Skin Diseases,” “Diseases of the Bones and Joints.” One physician's announcement, however, gave birth to a new idea about specialization:

“Skin, Blood, Allergy and Tonsil Diseases
“Pre-Marriage Blood Tests and Certificates”

Evidently this man did not believe in putting all his eggs in one basket. It is hard to decide whether he is advocating a somewhat limited general practice or multiple specialization. At least he is including a wide range of interests, and need turn away few potential customers. The fields of dermatology, hematology, and allergy cover a good deal of territory. Tonsil diseases might well take in the upper respiratory infections, which are supposed to constitute more than 60 per cent of the general practitioner's work; and the door is left open for tonsillectomies also. The matrimonial market has been quite active for some time, and there is no indication of a decline. Altogether this doctor should do fairly well for himself. We wish him well in his experiment in multiple specialization.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

A 66-year-old white engineer was seen at the Private Diagnostic Clinic of the Bowman Gray School of Medicine on January 20, 1942. His complaint at that time was weakness in the legs and back for five or six weeks. He said that he had wakened on the morning of December 8, 1941, with marked weakness of both arms and legs which gradually subsided with activity. This same series of events was repeated each day for three days, and then the patient was hospitalized for a short period. After being discharged he spent about four weeks in bed at home manifesting marked weakness of his legs, mental confusion, vomiting, and generalized weakness. He was referred to the Private Diagnostic Clinic because of persistent weakness of the left leg which was causing difficulty in walking.

The patient's father had died of carcinoma of the prostate at the age of 68 years, and one brother and one sister had angina. The patient's own past history was entirely negative for any previous serious illness. A review of systems was non-contributory.

Physical examination revealed a blood pressure of 158 systolic, 102 diastolic. The patient talked irrelevantly. Examination of the heart showed some enlargement, a blowing systolic murmur at the apex, a loud aortic second sound, and numerous extrasystoles. Neurologic examination showed motor weakness on the left side, with hyperactive tendon reflexes and a Babinski sign on that side.

The electrocardiogram showed numerous premature ventricular extrasystoles, diphasic T_1 and T_4 , and left axis deviation; it was interpreted as indicative of myocardial disease. The blood Kahn was negative. The clinical impression was coronary arteriosclerosis with probably an old infarction of the myocardium and emboli to the brain from a thrombus in the left ventricle.

The patient was next seen on September 1, 1947, when he was admitted to the North Carolina Baptist Hospital. Since he was not accompanied by any member of the family and since there was no note from the local doctor, few details could be obtained concerning his course since his last visit. The his-

tory obtained on admission was that he had suddenly collapsed ten or fifteen days previously, and had been in a comatose state since that time. Later his son stated that he had had a "heart attack" on August 21, 1947, and another such episode on August 26, 1947. About a week before that time he had had two episodes of weakness similar to those described on his first visit in 1942.

On physical examination the temperature was found to be 98.6 F., pulse 40, respiration 20, blood pressure 130 systolic, 90 diastolic. The patient was comatose and dehydrated and his breath had a foul uremic odor. The eyegrounds were not visualized. The heart was questionably enlarged, and there was a grade 1 systolic murmur at the apex. A third heart sound was heard at the apex which was synchronous with jugular pulsation. The rhythm was described as being abnormal and irregular, and a bigeminal pulse was also described. Moist rales were heard in both lung bases, and the liver edge was palpable two fingers' breadth below the costal margin. Neurologic examination showed ptosis of the right eyelid, with slight facial weakness on that side. The tongue was deviated to the left and the gag reflex was absent. The corneal and abdominal reflexes were absent, and there was absence of tendon jerks on the right side. They were present on the left side, however, and the Babinski sign was present bilaterally.

The hemoglobin was 14 Gm., the red cell count 5,500,000, the white cell count 6,850. The nonprotein nitrogen was 37 mg. per 100 cc. The electrocardiogram showed premature ventricular beats with bigeminal rhythm, left axis deviation, and intraventricular block. The abnormalities in the electrocardiogram were interpreted as indicating myocardial disease. A lumbar puncture done shortly after the patient's admission to the hospital revealed a clear spinal fluid under no increased pressure. The dynamics were normal and the Pandy test was negative, but there were 469 red cells per cubic millimeter. The spinal fluid protein was 40 mg. per 100 cc., and the Kahn was negative.

The patient's blood pressure varied between 103 and 160 systolic and between 70 and 90 diastolic, with marked fluctuations. During the first two days his temperature did not rise above 99, but on the third day it began to rise quite steadily. During the

last twenty-four hours it varied between 104.2 and 101.4 F. The patient's respiration was Cheyne-Stokes in character practically all the time. The patient never showed any tendency to improve, and began to bring up thick, purulent sputum. His breath had a particularly foul odor, which was easily noticeable upon entering the room. On the third hospital day an indwelling catheter was put in place, but was removed on the same day because of marked bleeding from the catheter. He was given 1,000 to 3,000 cc. of parenteral fluids daily, and was given 10 cc. of aminophylline intravenously on two occasions. The patient expired at 2:20 a.m. on September 17, 1947. The final clinical impression was cerebral vascular accident and terminal pneumonitis.

Discussion

DR. GEORGE T. HARRELL: In summary, this is the story of an elderly professional man who finally died in an acute exacerbation of an illness which had lasted at least five and a half years. The family history of carcinoma and angina is interesting, since these two conditions have a hereditary tendency. The patient's marital history is not described, and his past history was entirely negative.

The present illness affected the neurologic and cardiovascular systems. The respiratory symptoms were terminal. The suddenness of the onset, during sleep, in 1941, and the collapse in 1947 focus attention first on the neurologic system. Weakness was most marked in the left leg, and was accompanied by mental confusion and vomiting.

Anatomically, if the man were right-handed, the initial lesion affected the right frontal cortex, and since the leg was especially involved the lesion must have been high up toward the midline near the sagittal sinus. Unfortunately we have no information on the subsequent course of the patient; it would be of interest to know if the paralytic manifestations entirely disappeared, and whether or not he had any change in personality or decrease in mental capacity. In any event, with the second acute episode he again had several spells of weakness, separated by intervals of days and culminating in collapse and coma. Physical findings at this time suggested a lesion of the upper motor neurons on the left; the lesion could have

been in the frontal cortex, or lower, in the region of the internal capsule.

No symptoms related to the cardiovascular system were described at the time of the first visit, and the details of the episodes of weakness on his second visit are not given. However, physical examination in 1941 showed a blood pressure of 158 systolic and 102 diastolic, enlargement of the heart, a loud aortic second sound—indicating that hypertension had been present for some time—, extrasystoles, and a blowing systolic murmur. The electrocardiographic findings favor diffuse myocardial disease rather than a localized infarction.

On the patient's second visit the blood pressure was lower, the pulse was quite slow, and an interesting physical finding was heard—a third heart sound synchronous with jugular pulsation and undoubtedly originating from auricular contraction. The rhythm was again irregular, with a bigeminal pulse. The slow rate suggests a complete heart block, but this rarely occurs with irregular rhythm and bigeminy. The rales in the chest and the palpable liver edge could be evidence of cardiac decompensation; a note as to fullness of the veins and the presence of peripheral edema would support this impression. The electrocardiogram again indicated a disturbance of rhythm, left axis deviation, and slight intraventricular block, all of which suggested diffuse myocardial disease rather than a localized infarction.

The evidence for disease of the respiratory tract is confined to the physical examination. Elderly persons who are kept in bed, especially if they have congestive failure, inevitably develop pneumonia which is usually the immediate cause of death. The fact that the temperature was normal on admission, but rose steadily, indicates that the pneumonia developed in the hospital while the patient was under observation.

Etiologically the primary disease process could have been a neoplasm or a vascular disturbance. Since the initial symptoms were cerebral, one would think first of a brain tumor⁽¹⁾. A lesion which involved both frontal areas, starting on the right and five years later affecting the left, would suggest an anterior meningioma, or an infiltrating tumor which crossed the midline. The sudden

1. (a) Naffziger, H. C. and Boldrey, E. B.: Cancer of the Nervous System, J.A.M.A. 136:96-103 (Jan. 10) 1948.

episodes of weakness could be accounted for by hemorrhage. The tumors which frequently lead to hemorrhage are usually rapid-growing and fatal in six months or less. Meningiomas frequently are found anteriorly, arising from the connective tissue of the sagittal sinus. The age of the patient is consistent with this tumor, but meningiomas are more frequent in women than in men. Since they compress rather than infiltrate the brain tissue, meningiomas cause irritative phenomena characterized by localized epileptic (Jacksonian) attacks; none are described in this patient. Since they tend to calcify or to erode the skull, the tumors may be seen on x-ray films of the skull; none are described in this case.

What would be the most likely location of a primary tumor giving rise to a single metastasis to the brain? No history of weight loss is described which would be compatible with cancer. The most common site of cancer in men is the stomach; no gastrointestinal symptoms are described and the patient had no anemia. Tumors in the intestine usually erode the mucosa, causing the daily loss of small amounts of blood and producing anemia. Tumors of the kidney may metastasize to the brain, but they usually leave evidence in the lungs; no x-ray of the chest is described in this case. Metastatic tumors of the lung do not usually become secondarily infected to the degree suggested by the sputum and temperature in this patient. Furthermore, tumors of the kidney are characterized by bleeding and by anemia. The bleeding from the urinary tract followed the insertion of an indwelling catheter and must have been traumatic in character. Bronchogenic carcinoma may have a long course with few symptoms. Since the mucosa of the bronchus often does not ulcerate, the tumors may not bleed and the patient may go for months with no anemia. Common sites of metastasis are the brain and the adrenals; the total duration of this patient's illness would seem too long for a bronchogenic carcinoma with cerebral metastases, however. Furthermore, it is difficult to imagine either a primary or a metastatic brain tumor persisting for five years without causing headache or other symptoms and signs.

It is interesting that both tumors and infections metastasize from the lung to the brain with some frequency. Undoubtedly,

some unrecognized anatomic mechanism concerned with the angle at which the carotid arteries leave the aorta is responsible. The fact that the cerebral symptoms in this patient preceded the signs of pneumonia, however, makes metastatic brain abscess unlikely.

The purulent character of the sputum and the foul odor suggest that fusospirochetes had secondarily infected the congested lungs. The foul odor appears to have been misinterpreted as due to uremia, rather than infection; a uremic odor is pungent rather than foul. When proteolytic organisms, such as fusospirochetes from the mouth, enter an obstructed area in the lungs, tissue is destroyed and a foul odor results. Carcinoma of the bronchus may create such an obstructed area by encroaching on the lumen. Other causes of foul sputum are bronchiectasis and amoebic abscess, following rupture of an amoebic liver abscess through the diaphragm; no history suggesting either of these conditions is given, however.

The weight of evidence supports a vascular origin for the patient's symptoms. Was the primary lesion in the heart? It is known that coronary thromboses lead to myocardial infarction and the formation of mural thrombi. Mural thrombi in the left ventricle may be dislodged, and, following the same route as metastasizing tumor or abscess, they go with some frequency to the brain as cerebral emboli⁽²⁾. Cerebral emboli usually follow infarction within forty days, though most commonly they occur within ten days after the acute cardiac lesion⁽³⁾. No symptoms suggesting infarction preceded the onset of the patient's neurologic symptoms in 1941. The episodes in 1947 occurred at about the proper time following his two heart attacks. It is difficult, however, to conceive that a patient who has had an infarct of sufficient severity to lead to cerebral emboli could survive five and a half years with no cardiac symptoms in the interval. Furthermore, the electrocardiographic findings were more compatible with diffuse myocardial fibrosis than with a localized lesion such as infarction.

The weight of evidence, therefore, indicates that the cerebral lesions originated in

2. Blumer, G.: The Importance of Embolism as a Complication of Cardiac Infarction. *Ann. Int. Med.* 11:499-504 (Sept.) 1937.
3. Nay, R. M. and Barnes, A. R.: Incidence of Embolic or Thrombotic Processes During the Immediate Convalescence from Acute Myocardial Infarction. *Am. Heart J.* 30:65-76 (July) 1945.

the vessels of the brain. The patient is known to have had arteriosclerosis; arteriosclerotic cerebral vessels may either plug up with a clot or blow out with a hemorrhage. The finding of clear spinal fluid with no increased pressure favors thrombosis. Multiple cerebral thrombi may occur over a period of many years. The natural history of this process is well described by Alvarez⁽⁴⁾. Some of the symptoms usually seen in such cases—change in personality and inability to work—are lacking in this patient. Syphilis is a frequent factor predisposing to cerebral thrombus, but the clinical picture is not that of syphilis and the blood and spinal fluid Kahn tests were negative. Miliary cerebral aneurysms can lead to multiple cerebral accidents, but aneurysms are congenital anomalies which are usually manifest in the second and third decades of life.

It would appear, therefore, that we have followed the natural history of a generalized degenerative vascular disease manifested over a period of years by cerebral and cardiac symptoms with dramatic episodes due to complicating intravascular clots.

Dr. Harrell's Diagnoses

1. Generalized arteriosclerosis with hypertension.
2. Coronary arteriosclerosis with myocardial fibrosis, arrhythmia, diminished cardiac reserve, and congestive failure.
3. Cerebral arteriosclerosis with multiple fresh and old cerebral thrombi in the right and left frontal cortices and probably elsewhere.
4. Hypostatic bilateral bronchial pneumonia, secondary to congestion and aspiration of mouth organisms, mixed flora, predominantly fusospirochetes.
5. Ulceration of the bladder, traumatic, from insertion of a catheter.

Anatomic Discussion

DR. ROBERT P. MOREHEAD: Autopsy in this case revealed severe generalized arteriosclerosis with cardiac hypertrophy and diffuse myocardial fibrosis. The coronary arteries were markedly sclerotic, and their lumina were almost completely occluded at many points. A similar picture was presented by the cerebral arteries. The kidneys were finely granular, and the microscopic

changes were those typically encountered in advanced benign arteriolonephrosclerosis. Throughout the brain multiple areas of encephalomalacia with cyst formation were present, the largest being located on the medial surface of the frontal lobe superior to the corpus callosum. Beginning in the frontal pole the cyst extended posteriorly for a distance of approximately 7 cm.

The left pleural cavity contained 200 cc. of purulent exudate, and there was bronchopneumonia of the right lower and left upper and lower lobes of the lungs. In the lower lobe of the left lung multiple communicating abscesses were encountered.

Anatomic Diagnoses

1. Generalized arteriosclerosis, severe.
2. Cardiac hypertrophy.
3. Myocardial fibrosis.
4. Benign arteriolonephrosclerosis.
5. Multiple areas of encephalomalacia with cyst formation.
6. Bronchopneumonia of the lower lobe of the right lung and both lobes of the left lung.
7. Multiple abscesses of the lower lobe of the left lung.
8. Hemorrhagic cystitis.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

INSANE PERSONS: *The acts of two physicians in making an affidavit that a person's mental condition was such as to warrant admission to a mental hospital did not constitute an "adjudication" or legal declaration of his insanity.*

In this case the records show that a man was committed to a mental hospital on July 12, 1938. The procedure of commitment was according to the law prescribed and was regular in every detail. On July 19, 1938, a daughter instituted proceedings to have a guardian appointed, alleging that her father's mental condition was such that he might become the victim of designing persons, and dissipate his property. His property at the time consisted of two dairy farms valued at \$25,000, and cash and other assets

1. Alvarez, W. C.: Cerebral Arteriosclerosis with Small, Commonly Unrecognized Apoplexies, *Geriatrics* 1:189-216 (May-June) 1946.

valued at \$17,763. According to the usual procedure for the appointment of a guardian for a person confined in a mental hospital, the superintendent of the institution furnishes a certificate of need to the clerk or the probate judge. The officer having charge of such matters then has the power to appoint a guardian. In this case the respondent filed an answer denying the allegations made by his daughter and demanded a trial by jury.

At the trial in the lower court, the judge was of the opinion that the commitment of the respondent acted as a court injunction or cautionary court order which prevented the patient from signing business papers and agreements, and even rendered him incapable of testifying in his own behalf. Upon the basis of all the evidence the lower court ordered the appointment of a guardian, whereupon the patient's attorneys appealed to the Supreme Court, entering exceptions to the above opinion as well as to other alleged errors.

The Supreme Court held that the procedure of commitment did not in any way act as an adjudication or legal declaration of the respondent's insanity. The legal commitment of a patient authorizes the hospital to accept and to detain him as long as it is necessary, unless he is released otherwise according to law.

The Supreme Court specifically held that the procedure of commitment only justified the hospital in receiving the patient and adjudicated nothing as to his ability to conduct his own business affairs. As was noted above, the statutes provide a special procedure for the appointment of a guardian separate and distinct from the act of authorizing admission. The patient may elect not to contest the appointment of a guardian, but if he objects he has the right to have the issues determined by a court with or without a jury. When the question of a guardian for a person not confined to a mental institution arises, determination by a special court procedure is the only method provided.

The above decision simply means that the procedure of commitment undertakes to dispose of one problem in connection with a mentally disordered person—that of hospitalization. Despite this fact, one who seeks to transact business with a person who has suffered from a psychosis does so at his

peril. Contracts and business dealings with the insane are voidable. Although the courts are interested in the condition of the person suspected of insanity at the time the business dealing was consummated, the history of a previous psychotic episode is always supportive evidence both medically and legally in case of future attacks.

North Carolina law for some reason assumes that certain rights may be jeopardized by commitment and provides for a hearing before the clerk of court to determine the sanity of a person who has been discharged from a hospital for mental disease. The knowledge that such a hearing was held would no doubt make one less hesitant about entering into a business relationship with a person previously committed and confined to an institution. Since the mental illness might recur immediately after the hearing, however, the hearing would be of little help in adjudicating the validity of a transaction made subsequently. (Supreme Court of Pennsylvania, Feb., 1940. *Atlantic Reporter*, second series, vol. 11, p. 677)

PUBLIC RELATIONS

THE PUBLIC AND THE MEDICAL PROFESSION

With the possible exception of the Christian ministry, there is not, I think, a higher calling among men than that of the medical doctor. The clergyman is supposed to diagnose and prescribe for ailments of the soul, and the one who cannot do just that should take stock of himself. The medical doctor diagnoses and prescribes for bodily ills. Together, the minister and the doctor exercise a definite custodial care over humanity from the cradle to the grave, each helping to bring the individual into a more abundant life—here and hereafter.

No attempt will be made to become technical in this brief discussion of what should be the layman's attitude toward the doctor. Certainly there will be an absence of medical terms, for the very obvious reason that I am in no way familiar with such terms.

But is the medical profession *technical* in its dealings with the layman as was once the case? To all appearances, the profession is emerging from the maze of technicalities which formerly resulted in an aloofness on

the part of the uninformed layman. Time was when the doctor, having arrived at the patient's bedside by horse and buggy, would put on a grave expression as he applied the stethoscope, inserted the fever thermometer under the tongue, looked at the whites of the eyes, and felt the pulse. "Umph-humph," he would say, with a far-off look in his eyes. Then he would take pencil and pad, write a prescription in Latin, give certain directions which must be followed, and depart, to return later in the day, tomorrow, or perhaps in a few days, as the condition of the patient might require.

This gave the sick person and members of his household a sort of fear of the doctor, as if he knew more than he was willing to tell about the patient's condition, or perhaps, his nearness to death.

Time was when a doctor would no more have addressed a group of laymen, in their own language, than a preacher would have delivered a sermon at a football game. But now both the doctor and the preacher are becoming more practical.

There has been, for some years now, a growing tendency on the part of the doctor to meet the layman on terms of the latter's understanding; to throw aside secrecy and formality, and to substitute plain American talk for Latin prescriptions. That is as it should be.

In the promotion of this growing spirit of understanding between doctor and layman, public health, no doubt, has played an important role. Working with both in the field of preventive medicine, this already existing and well established governmental agency—both the State Health Department and the United States Public Health Service—may be considered a "liaison officer" between the doctor and the average citizen. The obligation resting on public health is not only to afford mass protection, but to educate the public to the importance of good medical care—through the private practitioner where the patient is able to pay, and at public expense if the patient is indigent.

Mass protection against certain communicable diseases is, of course, a benefit that is extended to all, without charge, because no population that is half sick and half well can be 100 per cent efficient. Moreover, communicable diseases can be transmitted from pauper to prince, and *vice versa*. Therefore

it is the business of government, now so recognized by all, to set up and maintain conditions conducive to the good health of all—by means of immunization, sanitation, and other measures carried on at public expense. Disease knows no barriers. It does not respect territorial lines. Especially is this true in this day of rapid transportation, when the remotest parts of the earth are within a comparatively few hours' flying time from any part of the United States. Communicable diseases heretofore unknown in this country exist in these remote sections, and can be imported from them. Therefore, it is necessary that our people not only become immunized against all preventable diseases, but also remain on guard against those ailments about which, at present, we know little, but which could easily be transmitted to us from distant parts of the world.

Hence, the importance of mass protection.

Aside from those communicable diseases against which means of immunization have been discovered, however, thousands of persons die every year in North Carolina and other states as the result of the chronic or degenerative diseases of middle and late life, against which the chief protection is early diagnosis.

While it is recognized that doctors consider it unethical to advertise—certainly as individuals—it would appear to be perfectly proper for the medical profession to establish and maintain relations with the lay public, in order to let the people know just what it has to offer in the way of early diagnosis and other preventive measures.

In 1942, the House of Delegates of the American Medical Association voted its approval of the extension service of local health departments throughout the United States. In September, 1945, the official *Journal* of the Association declared editorially: "Until the most remote American family has access to accepted modern public health services, the nation's health will not be properly served. Expansion of public health activity, long advocated and pioneered by the medical profession, is a more sound and logical step toward improving the nation's health than many grandiose plans for medical care."

Public health, in its role of "liaison officer" between the laity and the medical profession, can and should serve a still larger purpose than it has ever served before. The medical

profession, on the other hand, should seek still wider contacts with the public, through public health personnel. Public health is the child of organized medicine. No North Carolina doctor who has studied the history of his profession in this state is ignorant of the vision which was caught and held, more than seventy years ago, by Dr. Thomas Fanning Wood of Wilmington. That vision was translated into legislation which created, in 1877, the State Board of Health, which for a while was the State Medical Society. Later, the form of organization was changed, and the duties of the Board of Health were delegated to a board composed of members of the medical and allied professions, elected by the State Medical Society and appointed by the governor.

Here are some interesting facts, from which might be gathered many suggestions as to how the public and the medical profession may work together more closely in the promotion of the general health of the people:

In 1921, the ten leading causes of death in North Carolina were, in this order: heart diseases, tuberculosis, apoplexy, nephritis, pneumonia and influenza, diarrhea and enteritis, prematurity, non-vehicular accidents, pregnancy, and senility.

In 1946, the ten leading causes of death in our state were listed in this order: diseases of the heart, apoplexy, nephritis, cancer, pneumonia and influenza, prematurity, non-vehicular accidents, tuberculosis, motor vehicle accidents, and diabetes.

Compare the two lists and note the changes. Tuberculosis, for example, dropped from second to eighth place. Cancer, not in the first list, was fourth in the second.

Why the decline in tuberculosis? Because we did something about it—and we are going to do more. Two things are important in our fight against the Great White Plague. We must separate the infectious from the non-infectious patients, and we must use every means at our command to detect cases in their early stages, in order that the disease may be arrested and cured. In the mass surveys being made under the supervision of the State Board of Health, approximately a quarter of a million chest pictures had been made through December, 1947. The number of lives that will be saved as a result, no one can say. Those patients found to be infected

are referred to their family physicians.

There is a group of diseases, however, against which we have not made the progress that we have against tuberculosis. We have prolonged life by immunizing against preventable communicable diseases, many of which occur among small children. But many of the dangers that still confront our citizens of middle and late life remain to be reckoned with. We have referred to these generally; let us be more specific. Of the 15,482 deaths which occurred in North Carolina during the first half of 1947, 8,196, or *more than half*, were attributed to four causes: diseases of the heart, 3,779; intracranial vascular lesions, 1,736; nephritis, 1,390; and cancer, 1,291. Being a layman, I hesitate to make suggestions about the handling or treatment of human ailments, but there are certain observations which even a layman may make with impunity.

The above figures, it would appear to the most casual observer, emphasize the importance of periodic check-ups by a qualified medical doctor.

The matter of *education* to the importance of a *closer relationship* between the doctor and the layman has two sides. The layman should be informed as to the importance of seeking the services of the doctor; and the doctor should impart to the layman the information so necessary to his well-being.

It has been pointed out that one of the chief functions of public health is to refer those in need of treatment to the family physician. Indigent patients, of course, should be taken care of at public expense. But those able to pay should be referred to the private practitioner, because we have been wise enough, so far, to steer shy of socialized medicine, contract practice, and other radical policies which not only undermine free enterprise but encourage the appearance of political preferment on the scene. The medical profession should be kept as free from politics as the Christian ministry.

What can the doctor do to educate the people to the value of the services he can render, without advertising himself in the accepted sense of that term? That is a matter for the doctor to work out. And it *is* being worked out, by means of educational programs, conducted through publications and over the radio. It is to be hoped that these programs will be continued and broad-

ened in their scope, until every citizen of every age will know that his physical well-being lies in the hands of the qualified medical doctor. When education as to the value of medical assistance, in time to prevent as well as to cure, becomes universal, we may expect a reduction in sickness and death that will exceed our fondest expectations.

GOVERNOR R. GREGG CHERRY
Raleigh

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

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No. 2

CHEST X-ray surveys are now being carried on in many parts of the country or are being planned for the near future. The primary object of such surveys is to find cases of pulmonary tuberculosis while they are still in the early asymptomatic stage of the disease. However, it has been common experience everywhere that other intrathoracic lesions are discovered also by this procedure. In such cases the private physician must correlate the X-ray reports, the laboratory findings and the clinical picture in order to arrive at a diagnosis.

THE VALUE OF CHEST X-RAY SURVEY IN THE DIAGNOSIS OF CARDIOVASCULAR DISEASE

A chest X-ray survey may be of considerable value in the discovery of heart disease in addition to abnormal pulmonary conditions. There are various cardiac lesions which may cause changes in the contour of the cardiac silhouette or in the prominence of the great vessels. It is true that individuals with a serious heart disease such as arteriosclerosis of the coronary arteries may have entirely normal cardiac shadows in the X-ray film. Certain cardiac abnormalities which are detected by other forms of radiologic examination may not be apparent on the posterior-anterior view obtained in the routine chest film. Although it must be admitted that the X-ray survey cannot be 100 per cent effective in detecting individuals with cardiovascular disease, it may be a very useful device.

Enlargement of the left ventricle may be detected by the chest X-ray and may be due to any one of the following causes: hypertensive heart disease, arteriosclerotic heart disease, chronic rheumatic valvular heart disease with aortic stenosis and/or insufficiency, lentic aortic insufficiency and other less common cardiac lesions. Localized enlargement of the lower left cardiac border may be found in aneurysm of the left ventricle following coronary thrombosis with myocardial infarction. Right ventricular enlargement may be manifested by an increase of the heart shadow to the right of the midline. Commonly, however, moderate or even marked enlargement of the right ventricle may cause an increase in the heart shadow to the left. The posterior-anterior projection does not always, therefore, in itself give adequate information as to which chamber of the heart is enlarged.

An increased prominence of the pulmonary trunk and pulmonary artery shadow on the superior portion of the left heart border may be found in mitral stenosis, interauricular septal defect, patent ductus arteriosus, pulmonary arteriosclerosis, chronic cor pulmonale and thyrotoxicosis. It may also be present when the left side of the heart has decompensated as in hypertensive heart disease.

Relatively diffuse cardiac enlargement may occur in myxedema, thiamine deficiency, anemia and myocarditis. In myxedema, the cardiac contour may be globular.

Pericardial effusion may be manifested by cardiac enlargement to both right and left with fairly convex lower heart borders. Chronic constrictive pericarditis may be suggested by deposits of calcium seen in the cardiac shadow. Distention of the vena cava may be caused by constrictive pericarditis and may be detected on the routine chest film.

Abnormalities in the thoracic aorta may be found in a survey. Arteriosclerotic or syphilitic aneurysm of the aorta may present a striking X-ray appearance. Lesser degrees of tortuosity and ectasia may commonly be seen in adults of the older age groups. Deposits of calcium may be seen in the aortic knob. Decreased prominence or absence of the aortic knob may suggest coarctation of the aorta. This is especially true if scalloping of the rib margins and left ventricular enlargement are present. Abnormalities in the origin or course of the aortic arch may also be found.

Congenital cardiac lesions may be detected also in a survey. The tetralogy of Fallot may be suggested by the combination of the peculiar boot-shaped heart plus the anemic appearing lungs. Interventricular septal defects may cause enlargement of both the left and the right ventricle. Dextrocardia will be evident by the striking X-ray appearance of the chest. Other congenital cardiac lesions have been mentioned above.

It is essential that those individuals whose routine X-ray films show cardiovascular abnormalities be referred to their physicians for further studies. Only by obtaining a careful history and physical examination and by making judicious use of the electrocardiogram, other forms of radiologic examinations, and other laboratory procedures can an exact diagnosis be arrived at and proper management instituted. It is possible that some completely curable cardiac lesions may be discovered by the survey. The health of other individuals with cardiac disease may be preserved by regulating activity to an optimum level and by applying appropriate therapeutic measures.

The value of a survey to the health of a community is impossible to estimate. It will depend in large measure on how well the physicians of the community perform the task of arriving at an exact diagnosis and advising appropriate therapy.

The Value of Chest X-ray Survey in the Diagnosis of Cardiovascular Disease, George N. Aagaard, M.D., *The Journal-Lancet*, June, 1947.

The Schering Award for 1948 Announced

The interesting and vitally important subject of "The Role of Hormones in the Maintenance of Pregnancy" is the basis for the Schering Award for 1948. For the three best manuscripts submitted by undergraduate students of American and Canadian medical schools on such a designated phase of endocrinology, the Schering Award annually offers cash prizes of \$500, \$300, and \$200. The Schering Award is sponsored by the Schering Corporation of Bloomfield, New Jersey.

BULLETIN BOARD

MINUTES OF

EXECUTIVE COMMITTEE MEETING

December 14, 1947

The Executive Committee of the Medical Society of the State of North Carolina met at 11 a.m. on Sunday, December 14, 1947, in the Hotel Sir Walter, Raleigh, with the following members present:

Officers:

Dr. J. F. Robertson, president, Wilmington
Dr. J. G. Raby, second vice president, Tarboro
Dr. Roscoe H. McMillan, secretary-treasurer, Red Springs

Councillors:

Dr. Zack D. Owens, First District, Elizabeth City
Dr. John C. Tayloe, Second District, Washington
Dr. Newsom P. Battle, Fourth District, Rocky Mount
Dr. M. D. Hill, Sixth District, Raleigh
Dr. James H. McNeill, Eighth District, North Wilkesboro
Dr. Irving E. Shafer, Ninth District, Salisbury

Others present:

Dr. T. Leslie Lee, Kinston
Dr. Verne S. Caviness, Raleigh
Dr. Frank R. Lock, Winston-Salem
Dr. Fred C. Hubbard, North Wilkesboro
Dr. George L. Carrington, Burlington
Dr. A. B. Choate, Charlotte
Dr. John R. Bender, Winston-Salem
Dr. Ivan M. Procter, Raleigh
Dr. David A. Young, Raleigh
Mr. J. T. Barnes, executive secretary, Raleigh

After the meeting was called to order by President Robertson, all present rose and stood in silence for a moment, out of respect to the late president. Dr. Sharpe. Secretary McMillan then read the tribute to Dr. Sharpe which was written by Dr. Brockton Lyon and published in the December issue of the *North Carolina Medical Journal*. The following motion was put to vote and adopted:

"RESOLVED that the Executive Committee of the Medical Society of the State of North Carolina direct its secretary to draw up suitable resolutions concerning the death of Dr. Frank A. Sharpe, the president of the Society, and that the resolution which has just been read by the secretary be adopted as the expression of the Executive Committee and spread upon the minutes thereof, that it be published in the *North Carolina Medical Journal*, and that a copy be sent to the widow of Dr. Sharpe."

President Robertson suggested that the By-Laws of the Society should be changed so that the first vice president, rather than the president-elect, would succeed to the presidency in the event of the president's death. He asked the members present to consider the advisability of making such a change at the next meeting of the Society.

President Robertson then called on Dr. Frank R. Lock, chairman of the Committee on Maternal Welfare, who submitted the following report:

Report of the Committee on Maternal Welfare

The Maternal Welfare Committee has continued an active program to encourage better maternal care in North Carolina. The committee has had two meetings since the last report was made at the state medical convention, and a third meeting is to be held this afternoon. The committee has continued the maternal mortality survey which was begun in

August, 1946. Two hundred and sixty-seven maternal deaths have been investigated. Complete information has been obtained for practically all of the cases. In each instance, the physician who attended the patient has been sent a copy of the committee's analysis of the cause of death, and, in addition, a brief discussion of the factor which was considered primarily at fault in the case of preventable deaths. A fine spirit of cooperation has been exhibited by the physicians of the state, and there are only three who have not given the committee information about the patient's last illness and medical management.

The committee has continued to prepare a section for the *North Carolina Medical Journal* each month; and in recent months, we have used brief case reports to illustrate the errors in medical management which are frequent causes of unnecessary maternal deaths. We feel that the doctors in North Carolina are more interested in maternal welfare than they were at the time our study was begun, and that by virtue of this alone the committee has been successful.

We must, in addition, reach the public and our hospitals for the program to be successful. The North Carolina Hospital Association is anxious to work with us. They are now ready to send a copy of the last article prepared by the committee to each hospital in North Carolina. This article discusses one phase of the hospital's responsibility in the care of obstetric patients. They would like for the committee to prepare other articles concerning similar problems for distribution to the hospitals within the state. Our committee would like to have the approval of the Executive Committee before we enter this program.

Forty per cent of our maternal deaths resulted directly from ignorance or neglect upon the part of the patient or her family. In these cases, the patients failed to seek medical care or to follow the advice which was given them. In the majority, the patient was either uneducated or illiterate. We feel that an educational campaign to reach them must be broadcast by the radio stations of the state. It is not likely that printed matter would reach them.

If the Executive Committee approves of a program of public education, the Maternal Welfare Committee can arrange for a series of radio programs to be broadcast from each of the stations in North Carolina. The subject of the broadcasts would be based on a specific problem which has been determined by the maternal mortality study. This program can also be arranged through the North Carolina Hospital Association, the North Carolina Hospital Saving Association and similar agencies at no cost to the State Society, except the usual expense of the Maternal Welfare Committee.

Some of the newspapers of the state have learned of the work of the Maternal Welfare Committee and are interested in publishing accurate general information as a public service. We have not given any information to them, but we feel that it would be of value to give selected material to the newspapers in order to further the program of public education. We would like the approval or disapproval of the Executive Committee on this point.

Respectfully submitted,

FRANK R. LOCK, M.D., Chairman
Committee on Maternal Welfare

... Dr. Lock was commended for the excellent work of his committee, and the following resolution was adopted:

"RESOLVED that the Executive Committee approve the suggestions of the Committee on Maternal Welfare for the furtherance of that committee's work by cooperating with the North Caro-

lina Hospital Association and by inaugurating a program of radio broadcasts."

A motion to increase the appropriation of Dr. Lock's committee to take care of the full cost of its budget was made by Dr. Tayloe, seconded by Dr. Shafer, and passed. Dr. Lock then asked for an expression of opinion on the matter of giving out information to the newspapers. Dr. McNeill suggested that all publicity go out through the Public Relations Committee.

President Robertson called on Dr. T. Leslie Lee, chairman of the Cancer Committee, who submitted the following report:

Report of the Cancer Committee

The scope of this committee includes three distinct phases:

1. The direction of cancer control for the Medical Society of the State of North Carolina in this state.
2. To act in cooperation with the State Health Department in the administration of the Cancer Act.
3. To act as the Executive Committee of the North Carolina Division of the American Cancer Society.

These three duties consume an enormous amount of time and an untold amount of correspondence. Two meetings have been held so far this year—one on September 21, the other on December 7. The first meeting was attended by more than two thirds of the committee, and the last meeting was attended by all but one member. This, your chairman thinks, is an excellent record. It tends to show the interest of the profession in that great killer, **Cancer**. Your chairman and the committee feel that North Carolina is indeed fortunate in having such close cooperation in cancer control among the State Board of Health, the Medical Society of the State of North Carolina, and the North Carolina Division of the American Cancer Society. All three organizations are cooperating to the utmost in carrying out this program.

North Carolina is most fortunate in having at the head of the North Carolina Division of the American Cancer Society such an excellent woman as Mrs. George E. Marshall of Mount Airy, State Commander. Mrs. Marshall is most cooperative and is insistent that the program in this state be run in absolute cooperation with organized medicine. I feel that a letter from this body commending her upon her work would not be amiss.

At the first meeting of the committee the following questions were discussed:

The question of the employment of a Director of Cancer Control within the State Board of Health in North Carolina. As you will no doubt remember, this was provided for in the Cancer Act passed by the Legislature. So far the combined efforts of the Cancer Committee and the State Board of Health have failed to bring forth a director. This failure is due in no small part to the inability of the State Board of Health to pay an adequate salary for a man of the caliber desired, and to the scarcity of physicians. We are still working on this matter and hope to have it solved within the not too distant future.

The question of the establishment within the State Board of Health of a Department of Cytology was also discussed. It would be the purpose of this department to make available to all physicians in North Carolina on a free basis the interpretation of the recently developed and popularized Papanicolaou smear. This matter was tabled for further consideration and for consultation with

the State Board of Health.

The budget of the North Carolina Division of the American Cancer Society was read, discussed and approved. The Committee passed on the employment of a public relations firm—Mathis, Murphy, and Bondurant—to handle the public relations of the North Carolina Division of the American Cancer Society.

As the chairman was unable to attend the regional meeting of the American Cancer Society held in Miami, Florida, in November, Dr. Ivan Procter was appointed in his place. Dr. Procter attended this meeting and brought back many valuable suggestions on cancer control.

The chairman attended the annual meeting of the American Cancer Society in New York during the middle of November. I am extremely happy to report that the American Cancer Society is now organized on a firm and lasting basis. They have excellent men at the head of its various divisions. Its work is guided by a board of directors composed of the most prominent business men and physicians in the United States. Our own Dr. Wingate Johnson is a member of the National Board of Directors. Their program of education, research, and service is now going forward in a most satisfactory manner.

The following matters were discussed at the second meeting of the committee:

Dr. Carl V. Reynolds, the State Health Officer, was present, and discussed further the employment of a Director of Cancer Control in North Carolina. He stated his inability to secure such a director, but said that he had secured Dr. Ivan Procter of Raleigh, now inactive in the practice of medicine because of illness, to make a survey of the needs and methods required for cancer control within North Carolina. The purpose of this survey would be to have such information at hand when a director is employed. It was the thought that this would save an enormous amount of time. This matter was approved.

Many questions regarding the administration of the North Carolina Division of the American Cancer Society were discussed. A copy of the minutes will be forwarded to the president and secretary as soon as these are available. A new constitution and by-laws of the North Carolina Division of the American Cancer Society were adopted. In these by-laws the Cancer Committee of the Medical Society of the State of North Carolina is given responsibility for the policies, activities, finances, and other matters pertaining to the North Carolina Division of the American Cancer Society.

The committee voted to request the Executive Committee of the Medical Society of the State of North Carolina, through its secretary, to send out a form letter in the very near future and ask every county society to have at least one paper on cancer during the month of April.

It also voted to ask the approval of the Executive Committee in asking the Board of Editors of the State Medical Journal to devote the April issue of the **Journal** to cancer.

It voted to ask the president of the Medical Society of the State of North Carolina to appoint a Speakers' Bureau on cancer, which speakers would be available to any county medical society at any time.

In cooperation with the American Cancer Society it was voted to put on two refresher courses in cancer during the coming year, one of these courses probably to be held at Bowman Gray and one at Duke. Various phases of cancer would be covered by eminent physicians in this particular field. Expenses of such refresher courses would

be borne by the medical school and by the North Carolina Division of the American Cancer Society.

The committee would like specific approval of the Executive Committee of the Medical Society of the State of North Carolina on the following questions:

The request to ask each county society to devote at least one program during the month of April to cancer.

The request to the editorial board of the **North Carolina Medical Journal** that the April issue be devoted to cancer.

The appointment by the president of the Society of a speakers' bureau on cancer.

That the Society send Mrs. George E. Marshall a letter of commendation for her fine work in cancer control and for her fine cooperation with organized medicine.

That the Cancer Committee be allowed space for an exhibit at the 1948 annual meeting in Pinehurst.

Approval of the establishment of a cytology laboratory in the State Board of Health.

Respectfully submitted,

THOMAS LESLIE LEE,
Chairman

... Upon motion by Dr. McNeill, seconded by Dr. Hill, the recommendations of the Cancer Committee were approved. Dr. McNeill stated that the Kiwanis Club in North Wilkesboro was interested in getting a film, financed by the American Cancer Society, showing the essentials for setting up a cancer-detection center. He asked for an expression from the Executive Committee as to whether this would be considered ethical and feasible. A motion by Dr. Tavlou that the project be approved was seconded and carried.

In the absence of Dr. Winkler, chairman of the Industrial Health Committee, Secretary McMillan read the following recommendations from this committee:

1. "That the North Carolina State Medical Association urge its members to report known cases of industrial diseases to the local health departments."
2. "That the North Carolina State Medical Association urge the medical schools of the state to broaden their programs for undergraduate and postgraduate teaching of industrial health."
3. "That the North Carolina State Medical Association include in its future scientific programs a symposium on industrial health or invite a nationally known speaker to present a subject of interest to the general practitioner on industrial health."
4. "That the North Carolina State Medical Association recommend to the county medical societies to appoint committees on industrial health to work with the State Committee on Industrial Health."
5. "That the North Carolina State Medical Association urge industry to require a pre-employment physical examination including an x-ray of the chest, since it is the opinion of the committee that no examination of the chest is complete without an x-ray and that periodic health examinations include an x-ray of the chest."
6. "That the North Carolina State Medical Association urge industry to make provision for employing the physically handicapped individuals, provided they are not infectious to anyone."
7. "That county medical societies appoint committees for the purpose of cooperating with

the Workmen's Compensation Commission in reviewing medical testimony in cases in which questionable testimony is given."

8. "That the editor of the **Journal** of the North Carolina State Medical Association be requested to devote an issue of the **Journal** each year to industrial health."

The first, second, fourth, fifth, and sixth recommendations were approved; the third, seventh, and eighth, disapproved. It was suggested that if any section chairmen desired to present a symposium on industrial health at the State Society meeting, it would be agreeable. Dr. McNeill suggested that instead of devoting an entire issue of the **Journal** to the subject of industrial health, one or two pages in each issue be given to the subject. These suggestions met with no objection.

The report of the Insurance Committee was read by Dr. Caviness in the absence of the chairman, Dr. Papineau:

Report of Insurance Committee

A meeting of the Insurance Committee of the N. C. State Medical Society was held in Raleigh October 2, 1947. Every member of this committee was present except Dr. D. J. Rose of Goldsboro.

After a lengthy discussion, the committee was unanimous in its opinion that the Insurance Commissioner of this state is better qualified to pass on the qualifications of an insurance company than this committee. Accordingly it was moved that the Insurance Committee recommend to the Executive Committee of the N. C. State Medical Society that the policy of the society be made not to give endorsements to any insurance company.

It was further recommended that no endorsements should be considered to any program that is not favorable and available to all members of the N. C. State Medical Society.

The committee urges all physicians to make a careful study of all phases of any policy before accepting it.

ALBAN PAPINEAU, M.D.

Chairman, Insurance Committee

... A motion to adopt the report was seconded and carried.

Dr. Hubbard, chairman of the Committee on Rural Health and Medical Care, discussed the rural health education program to be conducted by the Good Health Association and the State Medical Society. The following outline of this program was filed:

Rural Health Education Program

Tentative dates: To be carried on throughout the year.

Plan: An intensive state-wide educational campaign designed to indoctrinate rural people with their medical care and health problems, and to enlist their active support for a comprehensive program of improvement.

Procedure: Program would be conducted by the Good Health Association and the State Medical Society, with the cooperation of dozens of state agencies. The Rural Health Committee of the Medical Society, of which Dr. Hubbard of North Wilkesboro is chairman, would represent the Society in its relations with the Good Health Association. The Medical Society would sponsor the program and the Good Health Association conduct it at the Society's request.

A Rural Health Education Committee would be formed to cooperate with the Good Health Association and the Medical Society in carrying out this education program. The membership of this committee, as suggested by the Rural Health Committee of the Medical Society and the executive director of

the Good Health Association, would be as follows:

Dr. Fred Hubbard, Medical Society; Dr. Harry L. Brockmann, North Carolina Hospital Association; Mr. Harry B. Caldwell, State Grange; Mr. R. Flake Shaw, Farm Bureau; Mr. J. G. K. McClure, Farmers Federation; Dr. Clarence Poe, *Progressive Farmer*; Miss Ethel Parker, State Board of Agriculture; Dr. Carl V. Reynolds, State Board of Health; Miss Edna Heinzerling, Nurses' Association; Thomas Pearsall, Farm Leader; Mrs. E. B. Hunter, P.T.A.; Dr. Ellen Winston, State Board of Welfare; Dr. I. G. Greer, N. C. Good Health Association, Inc.; Dr. W. M. Coppridge, Medical Care Commission; and Dr. F. D. Bluford, A & T College.

The program would open immediately with preliminary work for a two-day North Carolina Rural Health Conference, this conference to be held in January at the University in Chapel Hill. It would be co-sponsored by the Medical Society, the Good Health Association, the Agricultural Extension Service of State College, and the University School of Public Health. The reason for the conference would be to appraise rural health needs in North Carolina and to discuss ways and means to answer these needs, thereby assuring greater health opportunities to rural people. To this end the various farm organizations and other groups interested in rural North Carolina would be invited to participate in the conference and to help underwrite the expenses incident thereto.

The conference would include one or more luncheons and a dinner session, at which well known farm, medical and health authorities would speak.

The program for the two-day meet would feature discussion sessions, conferences, and addresses by experts on such subjects as Bringing and Holding Physicians in Rural Areas, Extension and Improvement of Public Health Facilities in Rural Areas, Progress of the North Carolina Good Health Program, Nursing Needs of Rural Communities, Financing Personal Health, Hospital Facilities and Community Clinics in Rural Areas, Non-Profit Hospital Insurance, Health Programs in Rural Schools, the Negro Health Problem, and others.

Following the conference, a rural health committee would be formed in each county throughout the state. Serving on these rural health committees would be the county chairmen and co-chairmen of the Good Health Association, the president (or his appointee) of the county medical society, one or more prominent farmers of the county, the county health officer, and local representatives of the farm and health agencies sponsoring the annual conference.

These local committees would be expected to conduct periodic meetings, at which the various problems of medical care and health protection in the county would be discussed and remedial action planned. These meetings would be open to rural residents from the county, and from any adjacent counties which might be concerned. Speakers for such occasions would be either local leaders with a special knowledge of the subject in question, or doctor representatives from a special Rural Health Speakers' Bureau to be organized by the State Medical Society.

The Rural Health Education Committee, in cooperation with the Good Health Association, the State Medical Society, the Agricultural Extension Service, the Rural Sociology Department at State College, the University School of Public Health, and other agencies, would prepare and issue a *Speakers' Manual*, which could be used as a reference guide for doctors agreeing to serve with the Speakers' Bureau. This manual would contain up-to-date data on health

resources and needs in all counties of the state, plus overall facts and figures for the state as a whole and comparisons with other states.

In addition to arranging the periodic discussion meetings, the county councils would be expected to give local assistance to the Good Health Association and the Medical Society from time to time on such special promotions as Good Health Week, Hospital Insurance Week, Nurse Recruitment, public opinion polls, and the distribution of health literature.

Purpose: (1) To raise the standards of medical care and health protection in rural areas by acquainting rural people with their needs and helping them to bring about improvements.

(2) To try to get the people to avail themselves more fully of existing health services and facilities.

Cooperating Agencies: State Medical Society, State College, North Carolina Medical Care Commission, State Department of Public Instruction, State Board of Health, State Nurses' Association, North Carolina League of Nursing Education, State Grange, Farm Bureau, Farmers Cooperative Exchange, Cotton Cooperative, State Board of Agriculture, North Carolina Social Hygiene Society, North Carolina Federation of Home Demonstration Clubs, State Board of Welfare, State Hospital Association, Duke University School of Medicine, University of North Carolina School of Medicine, Bowman Gray School of Medicine, North Carolina Tuberculosis Association, North Carolina League for Crippled Children, State Cancer Society, Duke Endowment, State Board of Medical Examiners, North Carolina Pharmaceutical Association, 4-H Clubs, North Carolina Congress of Parents and Teachers, Hospital Saving Association, Hospital Care Association, American Legion, American Legion Auxiliary, AMVETS, VFW, and other veterans' organizations. *Progressive Farmer* magazine, C.I.O., A.F. of L., North Carolina Council of Churches, State Dental Association, North Carolina Nutrition Association, North Carolina Federation of Women's Clubs, Rotary, Kiwanis, Jaycees and other civic groups, North Carolina Association of Public Welfare Superintendents, Farmers Federation, State Education Association, North Carolina Farm and Farm Women's Convention, State Dairy Products Association, and others.

Remarks: The Medical Society is deeply interested in this project. It is felt that this plan presents the Good Health Association with an opportunity to render a great service to rural North Carolina.

... After some discussion, Dr. Hill moved that the Society appropriate between \$300 and \$500 toward the rural health program for a one-year trial period. The motion was seconded by Dr. Shafer and carried.

Dr. John R. Bender, secretary of the Forsyth County Medical Society, who had been delegated to establish a state chapter of the American Academy of General Practice in North Carolina, gave a statement concerning the organization and purposes of the Academy⁽¹⁾, and requested the Executive Committee's approval of a state chapter. This approval was granted.

Dr. George Carrington then told of the progress being made toward a merger of the Hospital Saving Association and the Hospital Care Association. No action was taken on this matter.

The report of the committee to work in conjunction with the Hospital Saving Association to familiarize the doctors of the state with the requirements of the Veterans Administration was read by Dr. J. H. McNeill:

1. These are to be found in the editorial, "The General Practitioner Has His Innings," *North Carolina M. J.* 3: 420 (July) 1947.

Interval Report of the Committee to Collaborate with the Hospital Saving Association on the Home Care for Veterans

There were meetings in Washington, D. C., on September 14 and in Chicago on November 6, in which most of the thirty-eight states who have home-care programs for veterans were represented. Your chairman was present at the meeting in Washington, and Mr. E. B. Crawford of the Hospital Saving Association was at the meeting in Chicago, and I believe also that our new executive secretary was present at the meeting in Chicago. One very significant thing was noted by the people who attended these meetings—namely, that it was clearly shown in the discussion that all the thirty-eight states who are working on this program are experiencing the same difficulties and have the same viewpoint as does your committee. This within itself was some comfort to us and enabled us better to appreciate the overall picture and pointed very definitely to the fact that if anything is ever to be accomplished with the Veterans Administration all of these thirty-eight states will have to act largely as a unit in exerting their influence.

In addition to these meetings referred to above, private conferences have been held with Dr. J. C. Harding in General Hawley's office in Washington and with Dr. Erp from the Richmond office and Dr. Weirick from Winston-Salem. Very frank discussions ensued. One of the primary purposes of these conferences was to cut the red tape to a minimum. Some progress has been made along these lines; for example, in Michigan and Massachusetts, very much more simplified forms for requisitions and reports have been worked out and are now in process of trial in both of these states. The Veterans Administration has assured us that if these forms are practicable they will be finally approved within the next month or two and North Carolina will be allowed to use them as well. This will certainly represent one definite step toward uniformity and should help to simplify the paper work and speed up the process of authorization.

Your committee definitely approves of the home-care program for service-connected disabilities, but opposes very vigorously the building of large veterans hospitals and clinics throughout the country, which will unquestionably be used ultimately for the care of non-service-connected disabilities. We also feel that the various veterans' organizations should be made aware of what the home-care program means, and also what it would mean to have the large veterans hospitals for a regimented program of medical care for the veteran. We feel that the same amount of money that it would take to build these large hospitals could be expended much more profitably to the veteran by enlarging and improving existing medical and hospital facilities in the veteran's own community.

As was pointed out in the report to the House of Delegates in May of this year, we felt that many of the obstacles encountered in attempting to work this program were due to the old-time veteran administrator who probably deep down in his own heart wished to see this program fail. We have recently been informed that the regional medical officer of North Carolina has resigned as of January 1, 1948. We have talked with Dr. Harding in Washington by telephone, and he has assured us that either he personally or Dr. Erp from the district office in Richmond will come to North Carolina and discuss with the committee the type of man who is to be the new chief medical officer for this district. We are very anxious that the Veterans Administration appoint a man who would have a broader understanding and sympathy with the principles of the

home-care program and with whom we might expect a more cooperative relationship. We will exert our best efforts to see that this is accomplished.

Finally, as soon as the time is appropriate in the light of things which are now unsettled—for example, the appointment of this new medical officer, our conference with Dr. Harding concerning this, and the adoption of the shortened forms by the Veterans Administration—we will attempt to make a rather detailed statement for the *Journal*. In this statement we will try to explain who is eligible for this type of care, under what circumstances he is eligible, and many other details which we all need to know to perfect its function.

Respectfully submitted,
E. I. BUGG, M.D.
ALEXANDER WEBB, Jr., M.D.
J. H. McNEILL, M.D.
J. B. STEVENS, M.D.
E. McG. HEDGPETH, M.D.,
Chairman

... Upon motion, duly seconded and carried, the report was accepted.

Secretary McMillan gave the report of Dr. V. K. Hart's committee to review the matter of hospital and medical-service insurance:

Report of Dr. Hart's Committee

We first tried to select a representative committee, not only of the various specialties but of the various sections of the state. This committee was finally selected as follows: neurosurgery, Dr. Barnes Woodhall; urology, Dr. John S. Rhodes; obstetrics and gynecology, Dr. R. A. White; orthopedics, Dr. J. E. Jacobs; ophthalmology, Dr. Horace G. Strickland; internal medicine, Dr. Paul Whitaker; pediatrics, Dr. J. Buren Sidbury; radiology, Dr. Corbett E. Howard; dermatology, Dr. David Welton; general practice, Dr. J. Street Brewer; plastic surgery, Dr. Kenneth L. Pickrell; surgery, Dr. H. H. Bradshaw.

These men were asked then to make up tentative fee schedules with the idea of a top family income of \$3,000.00. Then, on November 1 and 2, we had our first general committee meeting at Sedgfield Inn. I am glad to state that there was a 100 per cent attendance. Furthermore, we had both Mr. Herndon and Mr. Crawford, from the Hospital Care and Hospital Saving Associations to consult with us.

I don't believe I ever worked with a group of men who came better prepared for the meeting or who were more sincere and earnest to serve not only their colleagues but the low-income group. A complete record of the meeting was made and the complete minutes will be sent to you under separate cover at a later date.

General rules of procedure were adopted. A top surgical fee was set; likewise a top medical fee. Then, each fee schedule was considered separately and thrown open for general discussion. Modifications were made as the committee deemed them necessary.

Finally, these recommendations were turned over to Mr. Crawford and Mr. Herndon for further study and analysis.

At a later date, I hope to reassemble this committee with representatives of the Blue Cross, who can then tell us two things: first, what it would cost to set up the proposed program; second, whether the proposed fees mean too high an insurance premium. If so, we may have to make further changes.

V. K. HART, M.D.

... This report was accepted.

Secretary McMillan then read the following letter from Dr. Donald Koonce, chairman of the Committee on Public Relations.

December 9, 1947

Dr. James F. Robertson, President
The Medical Society of the State of North Carolina
Wilmington, North Carolina

Dear Mr. President:

I very much regret that I will be unable to attend the meeting of the Executive Committee of the North Carolina Medical Society in Raleigh on Sunday, December 14. However, I would like to take this means to make a request for the Public Relations Committee, of which I am chairman.

Since the meeting seems to have a very full agenda, I will make no effort to make a report on this committee's function to date, but we stand ready to make a report at any time you so desire. The matter I would like to bring to the attention of the Executive Committee at the present time is the question of funds for carrying on our high school contest. At the present time, our committee only has the following authorization: To spend up to \$600.00 for a scholarship to be awarded as a prize for the best essay or declamation by a high school student on a subject selected by the committee pertaining to public relations.

This authorization does not take care of any expenses of this contest. The Committee requested no such authorization at our last meeting because we frankly did not realize what this undertaking meant. Dr. Stuart Gaul of Charlotte has very kindly agreed to take charge of the project and has already made considerable progress. It has been decided that an essay contest would be more practical than a declamation contest—first, because more would participate; second, because it would be more expensive and considerably more difficult to arrange for a local declamation contest followed by sectional ones, and finally by a state contest for sectional winners. There are 2000 schools to whom notices and instructions must be sent and 117 county superintendents. There must be pamphlets of information prepared by the State Educational Bureau but at our expense. Dr. Gaul estimates that the mailing and the mimeographing of our first notices and instructions would amount to around \$105.00. There will, of course, be other expenses of a similar nature.

I would like for the Executive Committee to authorize my committee to expend the necessary sums for mailing and advertising in this high school contest, the individual expenditures being subject to the approval of the president and the secretary-treasurer.

I realize that the Society is being called on for considerable financial expenditures, but without this additional expenditure we cannot hold our planned contest. In view of what I have been able to read, if the Public Relations Committee of the North Carolina Medical Society only spends between \$800.00 and \$1000.00 this year for its entire program it will undoubtedly be the lowest expenditure of any State Medical Society in the country. It is just a question of time before our Society will have to act similarly to a great many of the other societies and set aside a definite and considerable sum annually for the function of a Public Relations Department. How this can be done on the present income of the Society in addition to the many present expenditures by the treasury I frankly do not know. I, personally, do not believe that this Society can continue to function in its past efficient manner on the present income. Our Society has become "big business," and to manage "big business" it takes money. The only way of increasing our income is to increase the annual dues.

Sincerely yours,
DONALD B. KOONCE, Chairman
Public Relations Committee

... A motion by Dr. Shafer to appropriate the necessary additional funds for the Public Relations Committee's essay contest was seconded and carried.

At the suggestion of Secretary McMillan, the Executive Committee voted to allocate money to President Robertson for his expenses during the remainder of President Sharpe's unexpired term, and to take funds out of the general treasury to make up any deficit incurred at the Pinehurst meeting. Dr. Raby moved that the secretary send to each county society president or secretary a statement of the income of the Society and of the expected expenditures of the Society for another year. This motion was passed, and the meeting adjourned at 3:15 p.m.

POSTGRADUATE COURSE IN THORACIC DISEASES

The American Trudeau Society, in cooperation with the Duke University School of Medicine and the University of North Carolina School of Medicine, is sponsoring a postgraduate course in thoracic diseases at Durham and Chapel Hill, March 22-27. North Carolina physicians who are participating in the course include Drs. B. Black-Schaffer, Wiley D. Forbus, Oscar C. Hansen-Pruss, Deryl Hart, J. E. Markee, E. E. Menefee, Jr., Elbert L. Persons, David T. Smith, Eugene A. Stead, and J. C. Trent of the Duke University School of Medicine; Drs. Howard H. Bradshaw, C. C. Carpenter, George T. Harrell, and Wingate M. Johnson of the Bowman Gray School of Medicine; Drs. J. H. Ferguson, William deB. MacNider, and A. T. Miller of the University of North Carolina School of Medicine; Dr. Luther Kelly of Charlotte; Dr. J. D. Murphy of Oteen; Drs. William M. Peck and Henry Stuart Willis of the North Carolina Sanatorium; Dr. Paul Ringer of Asheville; and Dr. Claiborne T. Smith of Rocky Mount.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Four Negro schools of North Carolina have won honors in the 1947 Negro Essay Contest, conducted throughout the United States by the National Tuberculosis Association. The tenth grade of Carver High School, Kannapolis, won first prize for a paper on a tuberculosis survey. The Chemistry Club of Washington High School, Raleigh, was awarded second prize in the class project. Honorable mentions in the high school and college groups respectively were awarded to Marjorie M. Barnes, Allen High School, Asheville, and Loreno Yolande Mebane, Agricultural and Technical College, Greensboro.

* * * *

Dr. Charles E. Light, director of health education of the National Tuberculosis Association for the past five years, has resigned that position to join the medical division of Merck and Co., Inc. Miss Vivian V. Drenckhahn has been appointed acting director.

TRI-STATE MEDICAL ASSOCIATION

The forty-ninth annual meeting of the Tri-State Medical Association of the Carolinas and Virginia was held in Charleston, February 9 and 10. Among those participating in the program were Drs. Edward R. Hipp, John A. Brabson, Raymond Thompson, Oren Moore, and R. Douglas Neal of Charlotte; Dr. R. B. Davis of Greensboro; Dr. Fred R. Klenner of Reidsville; Dr. Karl Schaffle of Asheville; and Dr. J. Lamar Callaway of Durham.

STATE BOARD OF MEDICAL EXAMINERS

The State Board of Medical Examiners will hold its next meeting for the purpose of interviewing applicants for licensure by endorsement in Pinehurst on May 4.

NORTH CAROLINA SOCIAL HYGIENE DAY

North Carolina Social Hygiene Day, sponsored by the health divisions of the Charlotte Community Council and the North Carolina Social Hygiene Society, was observed in Charlotte on February 10. Dr. M. B. Bethel of Charlotte presided over the afternoon session, which included discussions by Drs. Carl V. Reynolds, R. E. Fox, Fred G. Pegg, Ralph B. Hogan, John J. Wright, W. P. Richardson, and W. F. Snow, board chairman of the American Social Hygiene Association. Dr. J. R. Heller, Jr., chief of the venereal disease control unit of the United States Public Health Service, was the principal speaker at the dinner session. Following Dr. Heller's speech, Dr. Snow awarded Dr. Reynolds an honorary life membership in the American Social Hygiene Association.

THIRD DISTRICT MEDICAL SOCIETY

The Third District Medical Society met in Garland on February 6, with approximately sixty-five in attendance. Papers were presented by Drs. William M. Nicholson, Eugene A. Stead, Jr., C. C. Erickson, and W. C. Sealey, all of the Duke University School of Medicine. Dr. Amos N. Johnson of Garland is president of the society.

CATAWBA VALLEY MEDICAL SOCIETY

The Catawba Valley Medical Society met at the State Hospital in Morganton on February 17. Dr. Lloyd J. Thompson of Winston-Salem spoke on "Modern Treatment in Psychiatry," and remarks were made by Dr. David A. Young of Raleigh.

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Hypertrophic pyloric stenosis was discussed by Dr. J. G. Raby and Dr. E. L. Roberson at the January meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on January 14. A public relations committee was appointed to fight socialized medicine. Members of the committee are Drs. C. T. Smith, J. G. Raby, Kenneth Wright, and C. W. Bailey. A cancer detection committee, consisting of Drs. William Smithie, E. S. Boice, and A. L. Daughtridge, was also appointed.

GUILFORD COUNTY MEDICAL SOCIETY

Dr. Westbrook Murphy of Asheville was guest speaker at the February meeting of the Guilford County Medical Society. His subject was "Recent Work of the National Physicians Committee."

The society is sponsoring a postgraduate course in medicine, consisting of a series of seven programs, to be held at weekly intervals in Greensboro and High Point. The first program will be on March 3, the last on April 18.

Physicians who have recently moved to Greensboro include Drs. Julius Theodore Davis, Ralph Callahan Lake, Eulis Robert Troxler, and Donald Conrad Schweizer. Dr. Joseph Lindsay Cook, a former member of the society who had been out of the county for the past few years, was reinstated as a member.

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society held its regular monthly meeting in Roanoke Rapids on January 16. The scientific program was conducted by the staff of the Roanoke Rapids Hospital.

WARREN COUNTY MEDICAL SOCIETY

At the January meeting of the Warren County Medical Society, held in Warrenton on January 15, the following officers were elected for 1948: President, Dr. C. H. Peete, succeeding Dr. G. H. Macon; vice president, Dr. Frank P. Hunter; second vice president, Dr. William D. Rodgers; secretary and treasurer, Dr. H. H. Foster. Drs. H. H. Foster and G. H. Macon were named delegates to the State Medical Society, with Drs. William D. Rodgers and C. H. Peete as alternates.

At a previous meeting the society unanimously endorsed the proposed hospital for Warren County.

GREENSBORO ACADEMY OF MEDICINE

The Greensboro Academy of Medicine is planning a symposium on the afternoon and evening of March 18.

INSTITUTE FOR HOSPITAL ADMINISTRATORS

The second Southern Institute for Hospital Administrators will be held March 22-27 on the campus of Duke University. Registration is open to administrators and assistant administrators of approved hospitals. Harold C. Mickey, superintendent of Duke University Hospital, is director of the institute.

ROANOKE-CHOWAN HOSPITAL

The Roanoke-Chowan Hospital in Ahoskie, the first hospital in the state to receive grants of federal and state aid, was completed this month. Dr. George Wadsworth will be chief surgeon for the hospital.

CHARLOTTE MENTAL HYGIENE CLINIC

Dr. William Magruder of Starkville, Mississippi, who was formerly on the house staff of Duke Hospital, has accepted an interim appointment as attending psychiatrist of the Charlotte Mental Hygiene Clinic until July 1. Dr. R. Burke Suitt is director of the clinic, and Dr. Charles H. Gay is president of the board of trustees of the Mental Hygiene Society, which operates the clinic.

AMERICAN PHYSICAL THERAPY ASSOCIATION CAROLINA CHAPTER

The Carolina Chapter of the American Physical Therapy Association offers advisory service for the placement of physical therapists in North and South Carolina.

Frequently qualified physical therapists request information on physical therapy vacancies in this area. If any organization, hospital, or physician wishes assistance in securing this personnel, please write Mary C. Singleton, Relations Chairman, Carolina Chapter, Duke Hospital, Durham North Carolina. Kindly describe the position and state the necessary qualifications.

NEWS NOTES

Dr. Anna M. Gove of Greensboro died of a cerebral hemorrhage on January 28.

NATIONAL TUBERCULOSIS ASSOCIATION FELLOWSHIPS

Establishment of a number of teaching and research fellowships in the field of tuberculosis by the National Tuberculosis Association has been announced by Dr. Esmond R. Long, director of the NTA's Division of Research.

Annual stipends for the fellowships will range from \$2,400 to \$3,200. Provision will also be made for laboratory fees and incidental expenses of like character. The fellowships will be limited to graduates of American schools for teaching and investigation in the United States. While preference will be given to applicants with a Doctor of Philosophy or Doctor of Medicine degree, fellowships will not be restricted to the holders of these degrees. Applications will be considered in the fields of pathology and bacteriology, clinical medicine, epidemiology and social and statistical research. Applicants may elect the institutions in which they wish to study.

Persons interested in obtaining a fellowship should write to Dr. James E. Perkins, managing director, National Tuberculosis Association, 1790 Broadway, New York 19, N. Y., for further information.

AMERICAN BOARD OF OPHTHALMOLOGY

Practical Examinations—1948

Baltimore, May 20-25

Chicago, October 6-9

Written qualifying tests will be held annually, probably in January of each year. Applicants for the January, 1949, written qualifying test must be filed with the secretary before July 1, 1948.

Executive office: Cape Cottage, Maine.

POSTGRADUATE COURSE IN ELECTROCARDIOGRAPHY

May 17 to 21, 1948

Emory University School of Medicine announces a five-day intensive course presenting a comprehensive survey of electrocardiography. Emphasis will be placed on the clinical interpretation of the electrocardiogram in the light of modern excitation theories and the newer techniques in electrocardiography. The uses and interpretation of multiple chest leads, unipolar leads, the ventricular gradient and variation in normal patterns will be stressed.

In addition to the Emory University Faculty, guest speakers who will participate in the program are:

Dr. George Burch, Tulane University
Captain Ashton N. Graybiel, Medical Corps,
U.S.N.

Registration Fee—\$40.00

Make application to:

Director, Postgraduate Education, Emory University School of Medicine, 36 Butler St., S.E., Atlanta 3, Ga.

AMERICAN HOSPITAL ASSOCIATION

The two institutes on hospital dietary departments scheduled for April by the American Hospital Association will be held in Buck Hill Falls, Pa., April 19-23, and in Kansas City, Mo., April 12-13. Emphasizing the place of the dietary department in the total hospital service offered to the community, both institutes are designed to help administrators work closely with their dietitians in establishing sound and efficient departmental organization with resultant attractive, well-planned patient meals.

NEWS NOTES FROM THE OFFICE OF THE SURGEON GENERAL

Positions Available in Army Hospitals Overseas

The U. S. Army Medical Department announces the availability of opportunities for advanced training and experience in the various special fields of medicine and surgery in overseas Army hospitals. These hospitals are registered with the American Medical Association, and this training may be acceptable by the specialty board as part of the period usually required to be spent in limited practice and experience prior to admission for examination. Interested members of the medical profession who have completed the formal training requirements for certification in one of the special fields are eligible to apply for these positions.

Eligible physicians are invited to communicate with The Surgeon General, U. S. Army, Washington 25, D. C., for further information.

VETERANS ADMINISTRATION

Dr. Paul B. Magnuson, nationally-known orthopedic surgeon and closely identified with the reorganization of medical care in Veterans Administration hospitals, has been named chief medical director for VA by Carl R. Gray, Jr., administrator.

Dr. Magnuson, former professor of surgery and chairman of the Department of Bone and Joint Surgery at Northwestern University Medical School, Chicago, succeeds Dr. Paul R. Hawley, who resigned January 1 as medical chief and who now is serving Mr. Gray as special assistant and advisor on medical problems.

DOCTOR WANTED

In the town of Pinetops, population 1,200, Edgecombe County, located in a prosperous, tobacco-farming section serving a community of 5,000 to 6,000. Has been served by two physicians during last twenty years. Both now totally disabled. Hospital facilities within a distance of twelve miles. Town has prescription druggist. A very good location for one doing general practice. Anyone interested should write Mr. S. B. Kittrell, Bank of Pine-tops, Pinetops, North Carolina.

LOCATION WANTED

Experienced, well trained eye, ear, nose, and throat man desires location in North Carolina. Not looking for any salaried position. Would prefer either to take over the offices of someone retiring or to become associated with some well established ethical group. Health excellent, habits temperate, does not drink. Member of Episcopal Church. Able to pay cash for any obligations taken on. Would require some two or three months to dispose of real estate holdings in present location.

Address "W"
Post Office Box 456,
Winston-Salem, N. C.

AUXILIARY

HYGEIA

Hygeia, the health magazine published by the American Medical Association, solves the physician's problem of placing a medical subject suitably before a lay audience. Sound health for mind and body is constantly featured.

Hygeia has always been of special interest to mothers of young children, as it contains a wealth of information on health habits, food and its preparation, emotional and behavior problems, and aids for sex education of the child. It enlightens people regarding the need of early diagnosis and treatment, the value of periodic health examinations, and the dangers of quackery and self-medication; but it never suggests that the magazine itself replaces the need of a physician's services.

Every physician and dentist should take advantage of the special reduced rates offered to them. The regular price of *Hygeia* is \$2.50 for one year, \$6.00 for three years. The special price is \$1.25 for one year, \$3.00

for three years. These rates also apply to doctors' and dentists' wives, and to any gift subscriptions they may wish to place.

The merits of *Hygeia* speak for themselves to anyone who is acquainted with the magazine. Send in your subscription now, either to your county *Hygeia* chairman or direct to your State Chairman.

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Morganton

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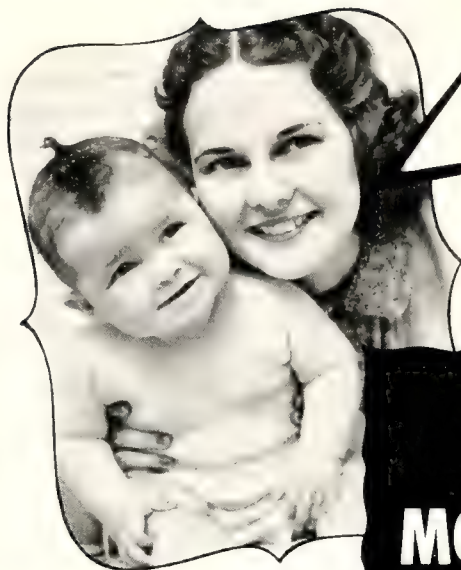


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BOOK REVIEWS

Fundamentals of Neurology. By Ernest Gardner, M.D., Assistant Professor of Anatomy, Wayne University College of Medicine, Detroit, Michigan. 336 pages, with 133 illustrations. Price, \$4.75. Philadelphia and London: W. B. Saunders Company, 1947.

This is an excellent short, simple book which discusses the anatomy and physiology of the nervous system. It probably represents the minimum of material that a physician should have at his disposal on these subjects. For that reason it may be of value for one who wishes to review quickly and briefly the nervous system without becoming involved in the detail of the longer texts.

In the preface the author alludes to "nurses, physiotherapists and occupation therapists." From his detailed definitions of such terms as "sagittal and coronal planes," "anatomy," "lesion," and "physiology" it is obvious that he directed the book primarily to these groups rather than to physicians, although the book has been advertised for the use of physicians. Neurologic diseases are not discussed.

The author is to be commended for including at the end of each chapter the names of several pioneer neurologists, anatomists, or physiologists, and giving in a sentence or two their main contributions. There is also a short bibliography with each chapter, and frequently a comment about the reference. This latter would be of great help to a busy student or practitioner in finding references in which he is most interested. It is hoped that this practice will be extended, especially by writers of textbooks.

Fundamentals of Psychiatry. By Edward A. Strecker, M.D., Sc.D., LL.D., Litt.D., F.A.C.P., Professor of Psychiatry, University of Pennsylvania. Ed. 4. 325 pages. Price, \$4.00. Philadelphia: J. B. Lippincott Company, 1947.

The three preceding editions of this book have demonstrated its popularity and its value. The edition which was printed in England during World War II was a godsend to medical officers of all allied armies. This fourth edition will continue to be a small Bible for the general practitioner and specialists in other fields. No better authority can be asked at this time.

Its necessary brevity is the main fault that one can find with the book. Dr. Strecker has done a truly remarkable job in condensing so much material into 325 small pages. As one reads the various topics, however, there is always the wish that Dr. Strecker would say more. Certainly there is not enough detail to warrant the recommendation of the book as a fundamental textbook or reference book for medical students or for doctors in training for the specialty of psychiatry.

Omissions of certain facts had to occur in such a condensation. For example, in the discussion of the treatment of paresis, no mention is made of the use of penicillin, although a page and a half is devoted to malarial treatment.

The grouping of psychoneuroses in a chapter with functional psychoses following schizophrenia and paranoid conditions seems unfortunate. Psychoneuroses need to be distinguished from psychoses and deserve a chapter by themselves. Many psychiatrists, too, would not agree with the joint consideration of

neurasthenia and anxiety reactions, with only eleven lines given to the symptoms of anxiety neuroses. This is a very important subject for all doctors of medicine. Also, one wishes that more could have been included under the discussion of psychosomatic medicine.

Although the book does suffer because of its brevity, it is an authoritative source and will serve well the busy general practitioner and specialists in branches of medicine other than psychiatry. For students and workers in fields related to psychiatry it is an excellent introductory or reference book.

Gifford's Textbook of Ophthalmology. By Francis H. Adler, M.D., Professor of Ophthalmology, University of Pennsylvania Medical School. Ed. 4. 512 pages, with 310 illustrations. Price, \$6.00. Philadelphia and London: W. B. Saunders Company, 1947.

Dr. Adler has made available to the general practitioner and student a most excellent and readily comprehensible review of the common and important ophthalmologic problems. The book is aimed at those readers who do not have extensive knowledge of ophthalmology, and it is admirably suited to their needs.

Like Dr. Adler's other writings, this book is written in a thoroughly simple and lucid style. The discussions of the physiologic fundamentals both in normal functioning and in ocular disorders are clearer and more accurate than those in the larger, more detailed ophthalmologic texts. The section on ocular motility and binocular vision is as simple and readable a presentation of this difficult subject as any this reviewer has seen.

Other particularly excellent sections are those on ocular disorders associated with central nervous system disease and ocular manifestations of general disease. Even the ophthalmologist will find these portions extremely helpful as a concise outline of the important features of these subjects.

The listing of therapeutic agents is especially valuable, since it weeds out many virtually useless but almost traditional drugs used about the eye, and lists the drug houses from which the more useful preparations can be obtained.

Not the least attractive features of this book are its new format, clear print, good illustrations, and convenient size. In the opinion of this reviewer, it is certainly the most valuable and readable of the small textbooks of ophthalmology, and it is heartily recommended.

Modern Cosmeticology. By Ralph G. Harry, F.R.I.C., Certificate of the Royal Institute of Chemistry in the Chemistry and Microscopy of Foods, Drugs and Waters, Pharmacognosy, Pharmacology and Therapeutics. Head of the Cosmetics Department, Beecham Research Laboratories, Ltd. Ed. 3. 515 pages, 9 plates in color, 30 illustrations. Price, \$12.00. Brooklyn, N. Y.: Chemical Publishing Company, Inc., 1947.

The author has made an attempt to breach the gap between dermatology and cosmeticology in a work which is primarily intended for the manufacturing trade. Dermatologic principles and considerations are mentioned with respect to each of a wide variety of cosmetics and so-called "beauty aids" which are generally available to the public without

prescription. Some of the topics covered in considerable detail have to do with lipsticks, hair tonics and lotions, face powders, permanent waving solutions, manicure preparations, acne medications, and eye lotions.

There are brief chapters on the anatomy and physiology of the skin, hair, nails, and teeth. It is unfortunate that the colored plates are not up to standard, as they do not show detail. A comprehensive discussion of the chemistry of various emulsion type bases, vanishing cream bases, lubricants, and other vehicles of value to the dermatologist is presented. There is an interesting section entitled "Cosmetic Facts and Fallacies," in which such fallacies as the belief that "crow's feet" can be eradicated by face creams and that certain agents act as "skin foods" are discussed.

This book should prove of value to all dermatologists as an encyclopedia of the constituents of cosmetic preparations. In a like manner it may also be of value to the allergist in his study of specific allergenic components of cosmetic preparations.

In Memoriam

WILLIAM D. JAMES, M.D.

In the passing of Dr. William D. James the Richmond County Medical Society and the fraternity at large lost a valuable addition. The loss of this competent surgeon was peculiarly personal to a host of people whom Dr. James had befriended by his skillful touch and patient ministry.

"Wally" James was endowed by his Creator with many sterling qualities which he cultivated and enlarged. His genial disposition, his "habit of making friends," his athletic prowess in college days and in summer semi-pro baseball gave him a touch that stood him in good stead when the imparting of his spirit to patients proved helpful in supplementing his skillful use of the operating room technique.

Dr. James was a native of Laurinburg, where he attended school in his early days. He was a student at the famous Horner Military Academy in Oxford, and then entered the University of North Carolina, where he began preparation for his career as a surgeon. He graduated from Jefferson Medical College in Philadelphia, and after internship in a New York hospital returned to his native home to embark upon a practice that carried his name and skill into homes all over this section.

After erecting a hospital building in Laurinburg and practicing there for five years, he moved to Hamlet, where he was owner and chief surgeon of a large hospital, the second one erected by his widening practice. Mainly the Seaboard shops attracted the doctor to the enterprising town in which he lived for thirty-two years, and where he died. He was official surgeon for the Seaboard Air Line Railway.

Dr. James was an active member of the Richmond County Medical Society, having served faithfully and well in several official capacities. His help in consultation and practice will ever be remembered by the brothers in the profession. He was a pioneer in the field of cancer and was one of the first to use x-ray and radium for the treatment of this disease. He was called on to conduct cancer clinics in North Carolina and neighboring states, under the guidance of the State Medical Society. In 1927 he was awarded second prize by the American Medical Association for his outstanding cancer exhibit. He

acted as secretary of the State Board of Medical Examiners from 1938 to 1944.

With the impact of the spirit of the foregoing, and much else that cannot be put down on paper, but which can only be caught by the contagion of the good man's personality, be it resolved by the Richmond County Medical Society that:

First: We have lost a valued friend and associate.

Second: We extend to his wife, daughters and son, and other loved ones our sincere sympathy, reminding them that "well roars the storm to those who hear a deeper voice beyond the storm."

Third: Copies of these resolutions be sent to Mrs. James, the press of the towns serving our Society, and to the Medical Journal.

Resolutions Committee:

T. B. HENRY, M.D., Chairman

R. B. GARRISON, M.D.

Z. F. LONG, M.D.

ELLIS H. SPAINHOUR, M.D.

Dr. Ellis H. Spainhour was born in Forsyth County on August 5, 1871. He was graduated from the Baltimore Medical College in 1898, and joined the State Medical Society the same year. Virtually all the rest of his life was spent in the general practice of medicine in Winston-Salem.

In July, 1946, Dr. Spainhour suffered a coronary occlusion. His heart never entirely recovered its normal function, although he did some office practice before his death from congestive failure on December 17, 1947. He is survived by one sister, Mrs. L. E. Hauser, of Pinnacle. He was never married.

Dr. Spainhour was a member of the Calvary Moravian Church, and for many years taught a class in its Sunday School. He was a Mason and a member of the Odd Fellows.

Dr. Spainhour's greatest contribution to medical progress in Winston-Salem was made when he took the leading part in a movement to build the first unit of the City Memorial Hospital on its present site, to replace the frame building, which accommodated only eighteen patients, on Brookstown Avenue. By funds provided for in the will of the late Mr. R. J. Reynolds, and added to by his widow, this unit was later enlarged to its present size. For many years Dr. Spainhour was a member of the visiting staff of the City Memorial Hospital.

Dr. Spainhour was one of those quiet, modest men who never sought the limelight, but who had the genuine respect of everyone who knew him. He was ethical and honorable in his dealings with his colleagues and with his patients. One of the greatest tributes that could be paid any doctor—or any man—came from one of his colleagues, who said that he had never heard Dr. Spainhour say an unkind thing about anybody.

In the passing of Dr. Spainhour the Forsyth County Medical Society has lost a faithful, loyal, and respected member, and the city of Winston-Salem has lost a good citizen.

The obituary committee of the Forsyth County Medical Society recommends that a copy of this memorial be spread upon the minutes of the Society, that a copy be sent to the North Carolina Medical Journal, and that a copy be sent to Dr. Spainhour's sister.

JOSEPH F. BELTON, M.D.

VANN M. LONG, M.D.

WINGATE M. JOHNSON, M.D.
Committee on Obituaries

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UNILATERAL RUPTURE OF CERVICAL DISC

GUY L. ODOM, M.D.

and

FREDERIC V. KRISTOFF, M.D.

DURHAM

Unilateral rupture of a cervical disc is analogous in many respects to rupture of an intervertebral disc in the lumbar region. It has been found to be the cause of a number of unexplained cases of pain in the upper extremity, which were previously referred to as cervical arthritis or neuritis, just as the lumbar protrusions have explained many cases of sciatica. In both locations there is pressure on a spinal nerve root, which in one case produces pain in the lower extremity, and in the other instance produces pain in the upper extremity. Both conditions produce the same type of mechanical and neurologic changes, except in cases where there is a massive protrusion. Because of the difference in the anatomy of the spinal canal in the two regions, a massive or medial protrusion in the cervical region involves the spinal cord, whereas in the lumbar region the cauda equina is affected.

Until recent years the occasional reports of ruptured cervical disc which appeared in the literature were all cases of cord compression. In 1943, Semmes and Murphey⁽¹⁾ reported 4 cases of compression of the seventh cervical root by a laterally ruptured disc between the sixth and seventh cervical vertebrae. Since then other reports have

appeared⁽²⁾. In each series the symptoms and signs have been very similar, and a definite syndrome has been established which is as classical as the one due to a ruptured disc in the lumbar region. It consists of stiffness of the neck, pain radiating into the scapula or pectoral region and down the lateral aspect of the arm and forearm, with paresthesia or pain in the thumb, index finger, or middle finger. The pain is aggravated by movement of the neck or factors which increase intraspinal pressure. There may be motor weakness, sensory impairment and reflex changes in the involved extremity.

Location

Rupture of a cervical disc occurs most frequently at the fifth and sixth cervical interspaces, which are the ones subjected to the greatest degree of stress or movement. In our series of 26 cases⁽³⁾ (table 1) there were 21 protrusions at the sixth interspace, 4 at the fifth, and 1 at the seventh. In the cervical region the nerve roots make their exit

From the Neurological Division of the Department of Surgery, Duke University School of Medicine, Durham, North Carolina.

Read before the Section on Neurology and Psychiatry, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 14, 1948.

1. Semmes, R. E. and Murphey, F.: The Syndrome of Unilateral Rupture of the Sixth Cervical Intervertebral Disc, with Compression of the Seventh Cervical Nerve Root, J.A.M.A. 121:1209-1214 (April 10) 1948.

2. (a) Spurling, R. G. and Scoville, W. B.: Lateral Rupture of the Cervical Intervertebral Discs, Common Cause of Shoulder and Arm Pain, Surg. Gynec. & Obst. 78: 350-358 (April) 1944.
- (b) Michelsen, J. J. and Mixter, W. J.: Pain and Disability of Shoulder and Arm Due to Herniation of the Nucleus Pulposus of Cervical Intervertebral Discs, New England J. Med. 231:279-287 (Aug. 24) 1944.
- (c) Bucy, P. C. and Chenault, H.: Compression of Seventh Cervical Nerve Root by Herniation of Intervertebral Discs, J.A.M.A. 126:26-27 (Sept.) 1944.
- (d) McKenzie, K. G. and Botterell, E. H.: The Common Neurological Syndromes Produced by Pressure from Extrusion of Intervertebral Disc, Canad. M. A. J. 46:424-435 (May) 1942.
- (e) Elliott, F. A. and Kremer, M.: Brachial Pain from Herniation of Cervical Intervertebral Disc, Lancet 1: 4-8 (Jan. 6) 1945.
- (f) Kristoff, F. V. and Odom, G. L.: Ruptured Intervertebral Disc in the Cervical Region; Report of 20 Cases, Arch. Surg. 54:287-304 (March) 1947.
3. (a) In none of these cases were there signs of cord compression.
- (b) Since this paper was presented, 10 additional cases have been operated on in the Duke Hospital.

Table 1

Case	Age	Sex	Duration of Symptoms	Location of Disc	Hypesthesia (Fingers)	Muscle Weakness	Reflex Changes	Total Spinal Fluid Proteins (Mg. per 100 cc.)	X-Ray Changes
1.	32	F	2 years	C-5—R	2nd and 3rd	Triceps	Biceps and triceps diminished	32	Narrowing and spur
2.	47	M	8 years	C-6—R		Triceps	Triceps diminished		Narrowing and spur
3.	35	F	3 years	C-5—L		Biceps, triceps, deltoid	Biceps diminished		Narrowing and spur
4.	48	F	6 weeks	C-6—L	2nd and 3rd	Triceps	Biceps diminished		None
5.	51	M	6 years	C-6—R	1st and 2nd	None	None		Narrowing, 5th and 6th interspaces
6.	39	M	1 year	C-6—L		Triceps, deltoid	None		None
7.	48	F	1 month	C-5—R	1st, 2nd, 3rd, 4th	Diffuse	Triceps diminished		Narrowing, 6th interspace
8.	48	M	5 weeks	C-6—R		Deltoid, triceps			Narrowing, 5th and 6th interspaces, spur
9.	47	M	1½ years	C-6—L	2nd, 3rd, 4th	None			Narrowing, 5th and 6th interspaces, spur
10.	52	M		C-5—R	3rd	Deltoid, triceps	Triceps diminished		Reversed curvature of cervical spine
11.	52	M		C-6—R		Biceps, triceps	Triceps diminished		None
12.	56	M	9 weeks	C-6—R	1st, 2nd	Triceps, biceps, deltoid	Triceps diminished		Narrowing, 6th interspace
13.	34	M	3 months	C-5—R		Biceps	Biceps diminished		Reversed curvature of cervical spine
14.		M		C-6—R					
15.	44	F	3 months	C-6—L	2nd, 3rd, 4th	Triceps	Triceps diminished	41	Narrowing, 6th interspace
16.	45	M	2½ months	C-6—L	All fingers	Diffuse	None		None
17.	44	F	3½ weeks	C-6—L	2nd, 3rd	Triceps	None	48	Reversed curvature of cervical spine
18.	38	F	5 weeks	C-6—R	2nd, 3rd	Deltoid, triceps	Biceps and triceps diminished	33	Slight spur, 6th cervical vertebra
19.	48	M	3 weeks	C-6—L	2nd, 3rd	Deltoid, triceps	Triceps diminished		Narrowing, 5th interspace
20.	36	M	11 weeks	C-6—L	2nd, 3rd, 4th	Triceps		58	Narrowing, 6th interspace, spur
21.	39	M	3 months	C-6—L	2nd	Deltoid, triceps, biceps		84	None
22.	60	F	7 weeks	C-7—R	4th, 5th	Triceps			Narrowing, 7th interspace, spur
23.	59	F	1 year	C-6—R	1st, 2nd, 3rd	Deltoid, triceps			Narrowing, 6th and 7th interspaces
24.	39	M	6 weeks	C-6—R					Narrowing, 6th interspace
25.	51	M	2 weeks	C-6—L	1st, 2nd	Diffuse, triceps most marked	Biceps diminished		Spur
26.	54	F	8 months	C-6—R	2nd, 3rd, 4th	Deltoid, biceps triceps	Triceps diminished		None

from the spinal canal *above* their corresponding vertebrae; therefore, if there is a protrusion between the sixth and seventh cervical vertebrae, the seventh cervical nerve root is the one which will be compressed. Thus it can be seen that the cervical roots most commonly involved are the sixth and seventh. These points are mentioned because it is occasionally possible to localize the lesion by the distribution of pain and the specific findings on examination.

History and Symptoms

Although a history of trauma may be obtained, the majority of patients cannot recall receiving an injury. The first symptoms are stiffness and pain in the neck (wry neck), which may come on suddenly and occur in bouts. Later the pain radiates beneath the scapula or into the side of the chest, and then over the shoulder and down into the arm or forearm and at times into the hand and fingers. The pain frequently stops just above the wrist, and paresthesias may be felt in the thumb or fingers. Since the pain is aggravated by movement of the neck, the head and neck are usually held in one position (fig. 1). The pain is also made worse by conditions which increase intraspinal pressure, but not as frequently or to the same extent as in rupture of a lumbar disc.

Pressure on the root of the sixth cervical nerve produces pain or paresthesia in the thumb and occasionally in the thumb and second finger, whereas pressure on the seventh cervical root affects the second and third fingers, and occasionally the thumb.

Neurologic Signs

The areas of *impaired sensation* (as demonstrated by pinprick) may vary from a small triangle over the dorsum of the hand between the first and second metacarpal bones to a fairly wide band extending along the lateral aspect of the arm and forearm, to the lateral aspect of the dorsum of the hand, and into the thumb, index, and middle fingers (fig. 2). Eighteen of our 26 patients had definite sensory changes. In patients with involvement of the seventh cervical nerve root, the sensory changes always affected the index finger, with equal involvement of the thumb and third finger. In the 2 patients with involvement of the sixth root who had



Fig. 1. The head is held towards the side of the lesion. This patient had a ruptured disc between the sixth and seventh cervical vertebrae.

sensory changes, the thumb and second finger were both affected (fig. 3).

Motor weakness, if present, most frequently affects the biceps or triceps. Weakness of the biceps indicates involvement of the sixth cervical root, and weakness of the triceps, involvement of the seventh cervical root. Rupture of a disc at either the fifth or sixth cervical interspace may also decrease the motor strength of the deltoid muscle. Occasionally compression of a single root may produce diffuse motor weakness of the arm. If compression of the seventh cervical root involves more than one muscle, the triceps will be the most seriously affected. In our series of 26 cases, motor weakness of one or more muscles was elicited in 22.

When *reflex changes* are present, they are also helpful in localizing the protrusion.

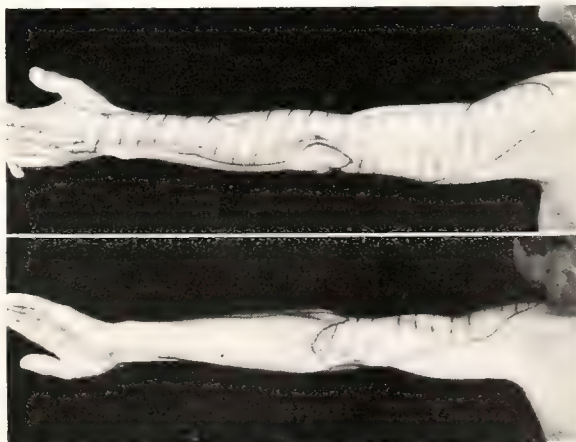


Fig. 2. The area of hypesthesia due to compression of the seventh cervical root by a ruptured disc between the sixth and seventh cervical vertebrae. The second and third fingers are also involved in most cases.

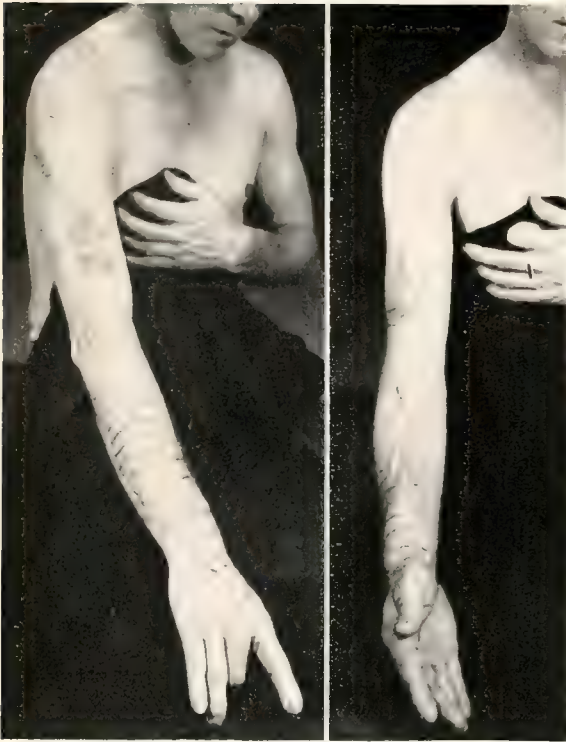


Fig. 3. The area of hypesthesia due to compression of the sixth cervical root by a ruptured disc between the fifth and sixth cervical vertebrae.

Suppression or absence of the biceps reflex indicates involvement of the sixth cervical nerve root, and decrease or absence of the triceps reflex, involvement of the seventh cervical root.

In cases of ruptured cervical disc, pressure on the spinous process of one of the lower cervical vertebrae will almost always reproduce the arm pain. Hyperextension of the neck may also aggravate the pain. Another test which often elicits the pain is flexing the neck towards the side of the lesion and exerting downward pressure on the top of the head. If these three maneuvers are positive, the diagnosis of a ruptured cervical disc is almost certain. They are extremely helpful in ruling out such lesions as the scalenus anticus syndrome and cervical ribs.

X-Ray Findings

X-rays of the cervical spine should be taken in antero-posterior, lateral, and oblique positions. These may reveal certain findings that are indicative of a ruptured disc, although not diagnostic. These changes are loss of the normal curvature, narrowing of the involved interspace, and spur forma-



Fig. 4. An x-ray of the cervical spine showing loss of normal curvature, narrowing between the fifth and sixth cervical vertebrae, and slight spur formation.

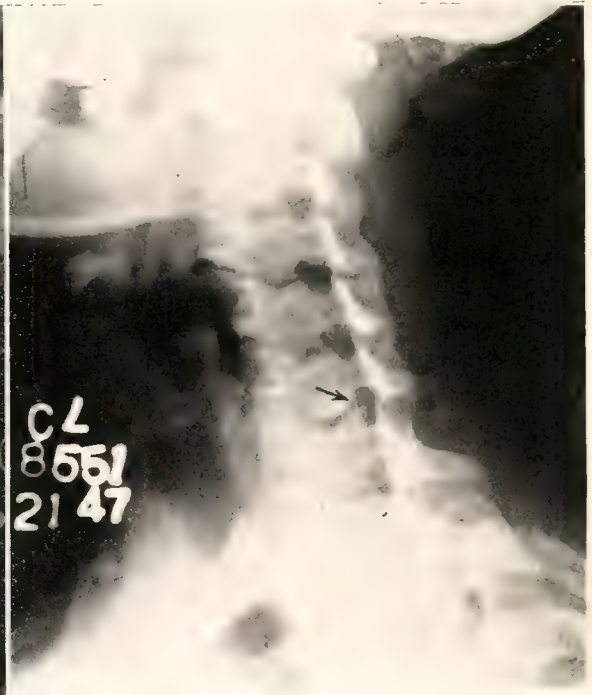


Fig. 5. An oblique view of the cervical spine, showing a bony spur projecting into the intervertebral foramen between the sixth and seventh cervical vertebrae.



Fig. 6

Fig. 7

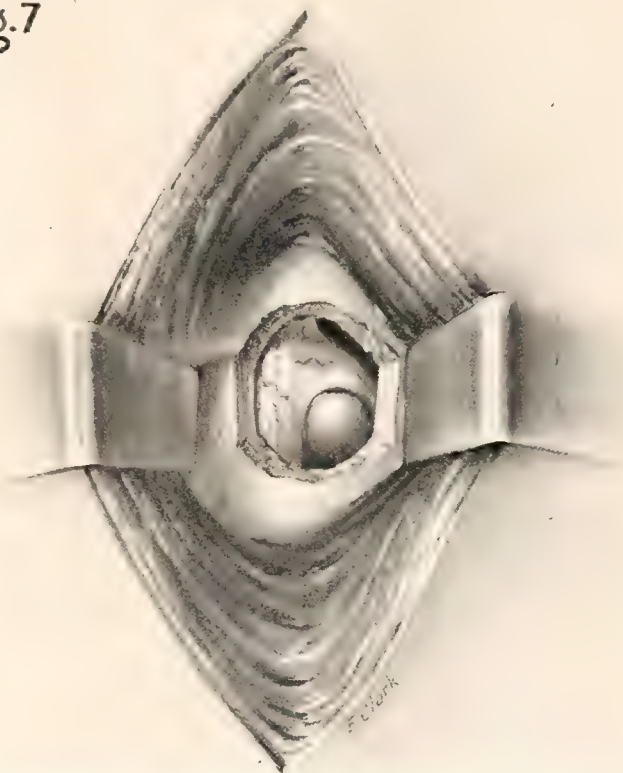


Fig. 6. A Pantopaque study showing defect between the sixth and seventh cervical vertebrae on the left due to lateral protrusion of the disc.

Fig. 7. Appearance at operation of a lateral ruptured cervical disc and nerve root.

tion from the edge of the vertebra at the involved disc (fig. 4). At times the oblique views will reveal a small osteophyte projecting into the intervertebral foramen (fig. 5). A Pantopaque examination is extremely helpful in the diagnosis and localization of the protrusion. This procedure should be carried out with 6 cc. of the oil. Care must be taken to keep the head and neck hyperextended to prevent the oil from running into the cranial cavity while it is being pooled in the cervical region. Because the disc protrudes far laterally, only a very small defect may be seen, such as non-filling of the nerve root (fig. 6). We feel that this procedure should always be carried out if there is any doubt about the diagnosis.

Treatment

All patients with unilateral ruptured cervical discs should be given a trial on conservative therapy. This should include bed-rest, diathermy, and halter traction. If the patient fails to obtain relief from halter traction, or if the pain returns when activi-

ties are increased, then the protruded disc should be removed. This operation is done through a partial unilateral hemilaminectomy of the adjacent lamina, at the site of the protrusion (fig. 7). The operative results have been excellent in our series, and in almost every case there is immediate relief of the pain.

Discussion

Dr. Robert Graves (Durham): Dr. Odom has given us an extremely clear and precise description of this syndrome. The majority of cases of pain in an upper extremity are due to simple fibrositis or bursitis, and these patients usually get well with a heating pad or some simple home remedy. Other cases in which the pain persists, however, fall into a group presenting more diagnostic difficulties. One condition to be considered in such cases is certainly unilateral rupture of a cervical disc.

I think that the syndrome perhaps most difficult to differentiate from a ruptured cervical disc is what we call sometimes a cervical brachial myelitis, neuritis, or medullitis. The most important point in the differential diagnosis of this condition is the fact that it usually involves two or more secondary cords of the brachial plexus, rather than one or two primary cords.

To give you one illustration, a patient came in with a story of sudden pain in his neck and shoulder, radiating down his arm. Within the next week, he

developed weakness of the trapezius, the latissimus dorsi and the triceps. These muscles are supplied by the third, fourth, fifth, and sixth cervical motor roots; it would be almost impossible to get that picture with a ruptured cervical disc. It is my opinion that when more than two cervical roots—either sensory or motor—are involved, the chances are that we are dealing with what we usually call brachial neuritis, and not with a herniated cervical disc.

THE THORACOLUMBAR SYNDROME AS A COMMON CAUSE OF BACKACHE

J. E. JACOBS, M.D.

CHARLOTTE

Although articles on the differential diagnosis and treatment of low back pain rarely include the thoracolumbar syndrome among the possible causes, it is my belief that irritation of the thoracolumbar region, with its associated neuralgia, is a common basis for low backache. The rather high incidence (10 to 15 per cent) of this syndrome in our cases of low back pain makes me feel that this problem should be more thoroughly understood and widely discussed. I have found it to be the responsible factor in several female patients who, after the usual conservative orthopedic care, pelvic surgery, appendectomy, and urologic investigation, continued to complain of back and "hip" ache. In the army I was astounded at the frequency of this syndrome, both on our orthopedic service and in soldiers whom I saw in consultation on urologic and general surgical services.

The literature on this syndrome is not profuse, and the subject is seldom mentioned in medical school lectures. One of the early references to the subject is found in an article by Carnett on "Intercostal Neuralgia"⁽¹⁾. In his article, "The Viscerospinal Syndrome,"⁽²⁾ Ussher discusses the subject from the standpoint of the internist. This article offers much food for thought. The recent book on "Segmental Neuralgia in Painful Syndromes" by Judovich and Bates⁽³⁾ is excellent.

Read before the Section on Surgery, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 14, 1947.

1. Carnett, J. B.: Intercostal Neuralgia as a Cause of Abdominal Pain Tenderness. *Surg., Gynec. & Obst.* 42:625-632 (May) 1926.
2. Ussher, N. T.: The Viscerospinal Syndrome. *Ann. Int. Med.* 13:2057-2090 (May) 1940.
3. Judovich, B. D. and Bates, W.: *Segmental Neuralgia in Painful Syndromes*, ed. 2, Philadelphia, F. A. Davis Co., 1946.

Anatomy of the Thoracolumbar Region

Bones

Study of the bony structure of this region discloses a significant fact⁽⁴⁾. The thoracolumbar articulation occurs in the sagittal plane, whereas the articulation between the eleventh and twelfth thoracic vertebrae is in the coronal plane. The twelfth thoracic vertebra can thus be identified by its asymmetrical facets—the superior articular processes facing forward, the inferior laterad. In the lumbosacral area the mechanical asymmetry has been stressed as an etiologic factor in low backache. Such articulations mechanically are not sound, and inasmuch as the superior articulation is protected by the more or less fixed rib cage, the inferior articulation (the thoracolumbar junction) receives the greatest strain.

The intervertebral foramen and the intervertebral disc are not of the same importance in the production of pain in this area as they are at the lumbosacral area, although the intervertebral foramen for the twelfth thoracic nerve is smaller than any of its contiguous ones⁽⁵⁾. I have been unable to demonstrate by myelogram any evidence of a ruptured intervertebral disc in cases of thoracolumbar syndrome.

The twelfth rib articulates with the vertebral body by a single facet and has no articulation on the transverse process. Goldthwait⁽⁶⁾ stressed the point that the twelfth rib has no interarticular ligaments and is capable of movement in all directions, so that when the other ribs are elevated it is depressed by action of the diaphragm. This depression has been shown to give rise to a neuralgia involving the twelfth thoracic nerve.

The normal contour of the spine is such that the twelfth thoracic vertebra lies at the junction of the thoracic kyphosis and the lumbar lordosis. Any scoliosis almost invariably involves this area. Such a leverage area, where the fixed dorsal spine joins the more movable lumbar spine, must be subjected to unusual strain, as is evidenced by the high incidence of compression fractures of the twelfth thoracic vertebra⁽⁷⁾. The lumbar en-

4. Gray, H.: *Anatomy of the Human Body*, edited by W. H. Lewis, ed. 22, Philadelphia, Lea and Febiger, 1930, p. 99.
5. Gray(4), p. 111.
6. Goldthwait, J. E.: *The Rib Joints*, *New England J. Med.* 223:568-573 (Oct. 10) 1940.
7. Watson-Jones, R.: *Fractures and Joint Injuries*, ed. 3, Edinburgh, E. S. Livingstone, 1943, v. 1, p. 301.

largement of the cord at the thoracolumbar area makes the housing relatively smaller here. The fact that the transverse processes are shorter in the upper lumbar area means that less protection is afforded the spine in this area. The muscle masses attached to the ilium and femur below and to the rib cage and thoracic vertebrae above therefore give a powerful leverage action at the thoracolumbar area.

Ligaments and fascia

The ligaments at the thoracolumbar junction do not offer the protection that the massive ones at the lumbosacral joint do. The lumbodorsal fascia is an investing membrane which covers the deep muscles of the back⁽⁸⁾. It is frequently affected by fibrositis.

Nerves

The twelfth thoracic nerve is attached to the spinal cord by two roots—anterior and posterior. The latter is characterized by the presence of a spinal ganglion. The twelfth thoracic nerve comes off the cord at about the level of the tenth thoracic vertebra, so that an intraspinal lesion affecting it must be sought at a distance of at least two vertebrae above. The sympathetic trunk supplies a branch (gray ramus communicans) from its ganglion to the twelfth thoracic nerve, and in turn receives a branch (white ramus communicans) from this same nerve.

The spinal nerves split into a posterior division and an anterior division. The former supply muscles and skin of the posterior trunk. In the case of the twelfth thoracic nerve, the medial branch of the posterior division descends along the spinous processes of the lumbar vertebrae, occasionally supplying the skin in the midline in the region of the fourth and fifth lumbar spinous processes. The lateral branch of the posterior division, after sending a filament medially along the crest of the ilium, passes downward through the skin of the buttocks⁽⁹⁾.

The anterior division of the twelfth thoracic nerve supplies the anterolateral part of the lower trunk—a fact which readily explains reference of pain to the lower abdomen. The lateral cutaneous branch of the anterior division enters the skin just about an inch above the middle of the crest of the ilium. It does not divide into anterior and pos-

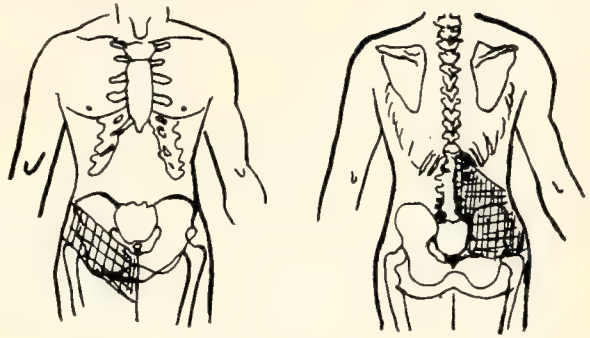


Fig. 1. Twelfth thoracic and first lumbar hyperalgesia.

terior branches, but is distributed through the skin of the front part of the gluteal region as far down as the greater trochanter⁽¹⁰⁾. This distribution over the hip may produce pain which is often called "sciatica" by casual observers. The medial cutaneous branch of the anterior division gives off a communicating branch to the first lumbar nerve (iliohypogastric nerve) and supplies the skin over the anterior-inferior iliac region, the groin, and the suprapubic region⁽¹¹⁾. This communicating branch from the twelfth thoracic nerve to the lumbar plexus⁽¹²⁾ readily explains the overflow of pain into the iliohypogastric and the ilio-inguinal regions often seen clinically (fig. 1).

Blood vessels

Since no arthritis or structural changes could be demonstrated in some cases of chronic neuralgia, the subject of vascular pain⁽¹³⁾ was considered. The arterial supply of the spinal ganglion is vulnerable, and reduction in the number of posterior root fibers after the third decade, with mild degeneration of the posterior column, has been shown by Bergmann and Alexander⁽¹⁴⁾. Only one fourth of the nerve roots in man have segmental arteries which contribute to the circulation of the spinal cord, and the lower thoracic region has the poorest blood supply of the entire cord. This factor may play a part in the frequency of neuralgia in this region, although I have not found that either vasoconstrictor or vasodilator drugs have any effect in these cases.

10. Gray(4), p. 942, fig. 827.

11. Gray(4), p. 943, fig. 828.

12. Gray(4), p. 946, fig. 830.

13. Yaskin, J. C.: Disease of Peripheral Nerves, in The Cyclopedia of Medicine, ed. 13, Philadelphia, F. A. Davis Co., 1935, v. 9, p. 73.

14. Bergmann, L. and Alexander, L.: Vascular Supply of the Spinal Ganglia, Arch. Neurol. & Psychiat. 46:761-782 (Nov.) 1941.

8. Gray(4), p. 394.

9. Gray(4), p. 919, fig. 809 and 810.

Etiology

As Carnett⁽¹⁵⁾ and Goldthwait⁽⁶⁾ pointed out, the most common cause of neuralgia involving the twelfth thoracic nerve is some spinal abnormality causing inflammation about the spinal nerve root, or actual pressure on it. Among the conditions which may produce such an abnormality are lordosis, scoliosis, and occasionally arthritis. The occurrence of the thoracolumbar syndrome following an acute infection of the upper respiratory tract is not uncommon. In such cases associated foci of infection in the teeth, nose and throat, or prostate should be eliminated as possible causes. The history of an acute sprain of the back in the thoracolumbar area, preceding the development of pain radiating into the hip and groin, is commonly obtained in industrial medicine. The part which may be played by fibrositis, with or without associated nodules, has been stressed by Menell⁽¹⁵⁾.

Diagnosis

History

The diagnosis of the thoracolumbar syndrome is not difficult. It must be considered as a possibility in any patient with chronic, dull, aching pains in the low back, radiating over the crest of the ilium and sometimes producing dull, chronic abdominal discomfort.

The intensity and duration of pain may vary almost unbelievably. It may be a mild soreness or an excruciating pain, and may last for a few hours or for years. This condition may be found in the apparently normal child whose play is interrupted with a "stitch" in the side which disappears upon resting; in the patient with "chronic appendicitis," whose pain recurs postoperatively; and in the ptotic, dyspeptic neurotic with operative scars and a symptom complex which may be traced back, through exacerbations and remissions, to youth. The persistent mild soreness may become the excruciating stabbing pain of toxic neuralgia, similar in severity to that of sciatica or tic douloureux, and even simulating an intra-abdominal catastrophe⁽¹⁶⁾. The pain may involve the eleventh or twelfth thoracic segment, or the first lumbar distribution, unilaterally or bilaterally.

Physical examination

Since pain is a subjective symptom, one must look for other signs such as tenderness elicited by palpation. Tenderness on deep palpation over the costovertebral area, extending out over the crest of the ilium and trochanter, is a rather constant finding. The examination of the involved thoracolumbar region should be compared with that of the opposite side; when a bilateral lesion is suspected, comparison with remote regions may be necessary.

Stroking the skin with a pin point is a useful test. Hyperesthesia may be elicited over the trunk of the involved nerve, along its course between or below the ribs, along its terminal distribution on the lower abdominal wall, and over its extensions into the groin and inside portion of the upper thigh (fig. 1). The dermatome area of hyperesthesia corresponding to figure 1 may be most noticeable posteriorly, laterally, or anteriorly, but remains constant during an acute episode. Stroking with a pin may excite the pilomotor elements of the skin in the involved dermatome, so that a cutis anserina or "goose flesh" is observed even before the patient flinches or reports a burning sensation.

Limitation of motion in the spinal segment, from the ninth thoracic down to the second lumbar area in one or all planes, is invariably noted. Aggravation of the discomfort by bending, coughing, or sneezing is a common observation. The presence of even a mild degree of scoliosis lends further weight to the diagnosis of the thoracolumbar syndrome⁽¹⁷⁾.

X-ray findings

X-rays taken with the patient lying down are often negative, but if they are taken according to the technique described by Hudson⁽¹⁸⁾, with the patient standing, the depressed twelfth rib, the lumbar scoliosis, the pelvic tilt, and the internal rotation of the head of the femur on the side of the low crest of ilium can be observed.

Differential diagnosis

Because of the costovertebral tenderness and the reference of pain into the inguinal or suprapubic regions, many patients with the thoracolumbar syndrome are seen first

15. Mennell, J.: Backache, Philadelphia, P. Blakiston's Sons and Co., 1931.

16. Carnett, J. B.: A Case of Intercostal Neuralgia Simulating an Acute Intra-Abdominal Catastrophe, S. Clin. North America 10:1329-1331 (Dec.) 1930.

17. Slobe, F. W.: The Dorso-lumbar Syndrome with Special Reference to Referred Pain, Illinois M. J. 80:332-336 (Oct.) 1941.

18. Hudson, O. C., Hettesheimer, C. A., and Robin, P. A.: Causalgic Backache, Am. J. Surg. 52:297-303 (May) 1941.

by the urologist. Pain referred into the lower chest and lower abdomen may send the patient to a general surgeon, and a cholecystectomy or appendectomy may be performed, without relief. Several patients who experienced severe pain in the inguinal region at the time of the acute thoracolumbar strain thought that they had "ruptured" themselves.

Female patients with this condition who have pain referred to the suprapubic area and lower pelvis may consult a gynecologist. The genito-femoral distribution of hyperesthesia has been the cause of dyspareunia in several of our cases, although I have never seen this recorded as an etiologic factor in the books on gynecology.

One patient who was referred to us had previously been sent to a neurosurgeon for chordotomy because of excruciating radicular pain along the course of the twelfth thoracic nerve on the right. This patient had had numerous cystoscopic examinations, a cholecystectomy, an appendectomy, a uterine suspension, and an ovarian cyst removed—all without relief. After we balanced her pelvis with a half-inch elevation of the left heel, gave her two perineural injections, and provided an adequate back support, she returned to work in a mill.

Treatment

The most important part of the treatment is to correct any postural defects present. Elevation of one heel is often necessary to correct a scoliosis^(2,18). Heat applied to the thoracolumbar area, rather than the lumbosacral area, may be helpful, although we have noticed that during the stage of acute hyperesthesia heat may be aggravating and a support may not be tolerated. After this stage is passed, the use of a corset with stays which go up beyond the thoracolumbar area, a brace which will protect this area, or even a plaster-of-paris jacket, if indicated later, may be prescribed. Rest on a firm mattress and graded exercises stressing good posture are advisable. The removal of obvious foci of infection and dietetic measures to improve the patient's nutrition will hasten his recovery.

During the acute phase a paravertebral nerve block will often give remarkable relief. The technique for injection of the twelfth thoracic and first lumbar nerves is as follows:

The patient lies in the prone position with a pillow under the lower abdomen. This flexes the spine, brings the last rib into prominence, and widens the spinous interspaces. The spinous processes of the first and second lumbar vertebrae are located; at a point overlying the upper edge of the first spinous process a line is drawn, on the side involved, at right angles to the long axis of the spine. Three centimeters laterally on this line a wheal is raised with procaine. Another wheal is raised on a similar line extending over the upper edge of the second lumbar spinous process at a distance 3.5 cm. from the midline. This distance also applies to the rest of the lumbar vertebrae, in case a more extensive nerve block is desired.

A 3-inch, 21-gauge needle is passed directly downward through each wheal to the transverse process. If the landmarks are correct, the needle point should impinge on the transverse process of the vertebra at a depth of about 4 to 6 cm. Should the needle point not touch the transverse process, it should be partially withdrawn and reinserted caudad or cephalad until the transverse process is located. After the depth of the transverse process is determined, the needle is partially withdrawn and reinserted, gradually changing the angle until the needle just clears the transverse process. It is then inserted to a depth 2 cm. beyond the transverse process. The needle should not be directed toward the spine. The plunger of the syringe is withdrawn to make sure that the needle point is not in a blood vessel. Five cubic centimeters of a 2 per cent solution of Novocain with Sarapin⁽³⁾ is then injected at each trunk.

In order to inject the twelfth dorsal nerve, it is necessary to locate the transverse process of the first lumbar vertebra. The first lumbar nerve is injected by locating the transverse process of the second lumbar vertebra.

Summary

The high incidence of the thoracolumbar syndrome in patients with low back pain is seldom recognized in the literature. The thoracolumbar spine, because of certain mechanical and anatomic factors, is susceptible to frequent strain and irritation. Irritation of the twelfth thoracic and first lumbar segments may produce symptoms simulating sacro-iliac and lumbosacral pain, or any of

several urologic, gynecologic, or surgical problems. The thoracolumbar syndrome produces consistent objective findings which will aid the investigator in ruling out other conditions.

The most effective method of therapy in cases of the thoracolumbar syndrome is perineural injection associated with the correction of obvious postural defects.

Discussion

Dr. H. H. Hodges (Charlotte): I feel sure that many of us have seen patients with the symptoms described by Dr. Jacobs and have vaguely ascribed them to intercostal neuralgia, radicular pain, or other similar conditions. With the description of symptoms, anatomy, and etiology which Dr. Jacobs has given us, we should be better able to recognize and treat such cases properly.

As Dr. Jacobs pointed out, far too many patients have been subjected to a needless series of abdominal operations for relief of pain which actually arises from the spinal or vertebral column. It well behooves the surgeon to think of this possibility before opening the abdomen.

On the other hand we must not forget that a wide variety of abdominal and some extra-abdominal diseases may present symptoms which might easily be confused with those described by Dr. Jacobs. Herpes zoster in its pre-eruptive stage might be difficult to differentiate from the acute phase of the thoracolumbar syndrome. I have seen recently a patient with a colonic neoplasm whose presenting symptom was pain radiating around the left lower rib margin from behind. This was initially thought to be nerve-root pain. Certain diseases of the liver such as tumor and hepatitis may produce pain in the right thoracolumbar area before jaundice is evident. Peptic ulcer of the posterior wall and gall-bladder disease also produce pain in the back not infrequently. Renal stones and other renal lesions may produce pain in the back which radiates downward and anteriorly without being typical of colic. One might continue the list to include root pain produced by early cord tumors, the girdle pains of tabes dorsalis, pain caused by the vertebral erosion of an abdominal aneurysm, and retroperitoneal tumors.

The important thing is that all of the patient's symptoms must be carefully evaluated in relation to the whole. With careful examination and reflection, the proper diagnosis will be made in the majority of instances. The data which Dr. Jacobs has presented should help us to differentiate cases of the thoracolumbar syndrome from the many other conditions which might cause similar pain.

The author wishes to thank the Heineman Foundation, Charlotte Memorial Hospital, for the slides used during this talk.

The existing relations between science and the public can still be summed up largely in the anecdote used by Lord Rayleigh . . . a decade ago. The great Australian transcontinental railway had been completed, and the first train was being dispatched at a gala ceremony. At the climactic moment, the passengers waved, the crowd cheered, the signal was given, and the locomotive proudly started off—leaving the train standing. Someone had forgotten to couple the engine to the cars.—R. W. Gerard: *Science and the Public*, *Science* 106:23 (July 11) 1947.

RADIOLOGIC DIAGNOSIS OF PATENT DUCTUS ARTERIOSUS

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and

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Recent improvements in the technique of thoracic surgery, and the development of operations for the repair of certain cardiac anomalies have made the diagnosis of congenital malformations of the heart increasingly important. Although the surgical treatment of some of these anomalies offers only partial relief, the one with which we are concerned today—patent ductus arteriosus—can be completely overcome, in uncomplicated cases, by successful ligation or division. With this fact in mind, I would like to review briefly the chief roentgenologic features of this condition, and present the radiologic findings in an additional 6 cases which have been proven at surgery.

Perhaps the most important place in the diagnosis of patent ductus is assumed by the clinician, since the most constant finding is that of a "machinery murmur" in the pulmonary area. The radiologist plays a definite role in confirming the clinical picture and in determining the extent of the physiologic changes both before and after surgery. In a few cases the characteristic murmur and thrill are not present, and one must rely on the x-ray findings alone. A final diagnosis should never be made until the clinical and radiologic features have been carefully correlated. Kymography and angiocardigraphy⁽¹⁾ are reported to be of value in the diagnosis of patent ductus arteriosus, but have not been used by us.

The most comprehensive study of this subject is that published by Donovan, Neuhauser, and Sosman⁽²⁾ in 1943, in which 50 proven cases were presented. We shall follow their plan for presentation of the x-ray findings. Further clinical and operative find-

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Read before the Section on Radiology, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 13, 1947.

1. Steinberg, M. F., Grishman, A., and Sussman, M. L.: Angiocardiography in Congenital Heart Disease: Patent Ductus Arteriosus. *Am. J. Roentgenol.* 50:306-315 (Sept.) 1943.
2. Donovan, M. S., Neuhauser, E. B. D., and Sosman, M. C.: Roentgen Signs of Patent Ductus Arteriosus. *Am. J. Roentgenol.* 50:293-305 (Sept.) 1943.

ings on this series of 6 cases have been reported elsewhere⁽³⁾. Associated congenital anomalies will not be considered in this discussion.

Preoperative Findings

In the literature

1. The most frequent finding recorded is *dilatation of the pulmonary artery*, which is present in about 80 per cent of the cases. Eppinger and Burwell⁽⁴⁾ have clearly explained the physiologic basis for this finding and the others to be discussed. The dilated pulmonary artery results from the abnormally large volume of blood which flows into this vessel from both the right ventricle and the aorta.

2. The second most common finding, present in 76 per cent of the cases, is *cardiac enlargement*, with a predominance of left ventricular hypertrophy. In some cases as much as 75 per cent of the output of the left ventricle passes through the ductus to the pulmonary artery. Since the left ventricular output, in order to maintain an adequate systemic circulation, must be two to four times that of the right ventricle, hypertrophy of the cardiac musculature results.

The enlargement is seldom marked unless complications are present.

3. *Enlargement of the left auricle* is present in about 70 per cent of the cases and is due to the fact that the mitral valve cannot transmit the greater volume of blood returning from the lesser circulation.

4. *Pulmonary congestion* is seen in about 70 per cent of the cases, and is due to the increased volume of blood in the lesser circulation.

5. *Exaggerated beat of both the left ventricle and the pulmonary artery* results from the increased volume of blood passing through these structures, and is present in approximately 70 per cent of the cases.

6. The most infrequent finding, but one which may be very striking when present, is that of *expansile pulsations of the pulmonary vessels*. This is seen in about a third of the patients and is due to the increased volume of blood present in the pulmonary arteries, with associated insufficiency of the pulmonary valve⁽⁵⁾.

In our series

In our series of 6 cases (table 1) the ages of the patients ranged from 16 to 30 years, averaging 23½. There were 2 men and 4

5. Roesler, H.: Clinical Roentgenology of the Cardiovascular System, Springfield, Illinois, Charles C. Thomas, 1937.

Table 1

Preoperative X-Ray Findings Recorded in Individual Patients

Case	1	2	3	4	5	6	Incidence
Sex	F	M	F	M	F	F	2 women to 1 man
Age (years)	24	25	18	28	30	16	Average 23.5
Cardiac enlargement	+	+++	+	0	+	++	84%
Left ventricular enlargement	+	+++	+	0	+	++	84%
Left auricular dilatation	0	+++	0	0	0	++	33%
Enlargement of pulmonary artery	+	+++	0	+	++	++	84%
Hyperactivity of left ventricle and pulmonary artery	+ or ++	NR*	0	NR*	NR*	0	?16%
Hilar dance of pulmonary vessels	+	NR*	0	+	+	0	50%
Engorgement of pulmonary vessels	+	+++	0	+	+	++	84%
Transverse diameter of heart	11.3	17.0	13.5		13.0	13.2	
Transverse diameter of chest	23.7	?	24.0		26.0	26.2	

Associated findings were subacute bacterial endocarditis in cases 1, 2, 4, and 5, and a saccular aneurysm of the pulmonary artery proximal to the ductus in case 3.

Not recorded.



Fig. 1 (Case 6). A posterior anterior film of the chest shows cardiac enlargement in the transverse diameter, predominantly left ventricular. There is also a prominence in the region of the pulmonary artery, prominence of the pulmonary vascular markings, and a small aortic shadow. Fluoroscopic examination with a barium swallow showed enlargement of the left auricle and hyperactivity of the left ventricular beat. No "hilar dance" was noted.



Fig. 2 (Case 6). A postoperative chest film shows a decrease in the pulmonary congestion. Other cardiovascular findings are essentially unchanged. The usual pleuropulmonary changes following surgery are present.

women. Four of the patients had subacute bacterial endocarditis which was treated medically before operation with sulfonamide drugs and penicillin. In one case a saccular aneurysm of the pulmonary artery was present proximal to the ductus. No other complications were encountered.

1. *Dilatation of the pulmonary artery* was present in all except one case. In 4 cases it was slight to moderate in degree, but one patient with bacterial endocarditis had rather marked enlargement of the pulmonary artery. The dilatation was visible on the posterior anterior view, but was better demonstrated in the right anterior oblique position, in which the pulmonary conus can be visualized. Other causes of fullness of the cardiac waistline and prominence of the pulmonic arch, such as mitral valvular disease, thyrotoxicosis, aneurysms of the pulmonary artery, pulmonic stenosis with post-stenotic dilatation, and other types of congenital heart diseases, must be excluded.

2. *Cardiac enlargement* was present in all but one case. In 4 patients it was slight to moderate in degree, and was predominantly left ventricular. Only 1 patient had marked cardiac enlargement, and this case was complicated by innumerable vegetations of subacute bacterial endocarditis on the aortic valve. Other causes of cardiac enlargement must be ruled out. One patient (case 3) had cardiac enlargement with a configuration typical of an aortic valvular lesion, but we felt that treatment should be based on the clinical and physical findings, which were typical of patent ductus.

3. *Enlargement of the left auricle* was present in only 2 of our cases (no. 2 and 6), being marked in one patient with subacute bacterial endocarditis and moderate in a second. The incidence of this finding in our series is only half as great as that reported by the group in Boston. This finding may be demonstrated by barium swallow in the right anterior oblique position. It can usually be differentiated clinically from enlargement of the left auricle associated with rheumatic heart disease with mitral stenosis.

4. *Engorgement of the pulmonary vessels*

was marked in one of our patients, moderate in one, slight in three, and absent in one. The case with marked engorgement was complicated by bacterial endocarditis.

5. *Exaggerated beat of the left ventricle and the pulmonary artery* was recorded in only one of our cases (no. 1), being present to a moderate degree on one examination and to a slight degree at a later date. This finding was absent in 2 cases (no. 3 and 6), and unfortunately was not recorded as either present or absent in the remaining 3 cases. Other causes of hyperactivity may be thyrotoxicosis, anemia, and aortic insufficiency.

6. The *expansile pulsation* or "hilar dance" was present in 3 cases and absent in 3. This finding is not diagnostic, and may be present in other types of congenital heart disease. The most pronounced case of hilar dance we have encountered was associated with stenosis of the pulmonary artery with poststenotic dilatation.

Postoperative Findings

All of the above findings revert to normal, or nearly so, following closure of the ductus, except for hypertrophy of the left ventricle, which shows little change as a rule. The only postoperative films we have on our patients were made soon after operation and show little change. On films made at a later date the changes would probably have been more definite.

Summary

1. The radiologic findings in 6 cases of proven patent ductus arteriosus have been presented.

2. Each of the characteristic findings previously reported—dilatation of the pulmonary artery, cardiac enlargement, enlargement of the left auricle, engorgement of the pulmonary vessels, exaggerated beat of the left ventricle and pulmonary artery, and "hilar dance"—occurred in at least one case in our series.

3. The findings vary considerably in each patient, but the presence of one or more of these features should make one suspect the diagnosis.

4. Marked cardiac enlargement is present, as a rule, only when the condition is complicated by subacute bacterial endocarditis or associated anomalies.

5. A final diagnosis should be made only after close correlation of the radiologic and clinical findings.

X-RAY FINDINGS IN ARTIFICIAL PNEUMOTHORAX

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Pneumothorax in Non-Tuberculous Pulmonary Lesions

The primary use of artificial pneumothorax is for the treatment of pulmonary tuberculosis. However, it has also been used, without much success, in treating non-tuberculous lesions of the lungs such as bronchiectasis and pulmonary abscess. Figure 1 shows a lung abscess situated near the periphery. It has a thick wall and pleural adhesions—the main causes for failure of collapse therapy. These adhesions usually form early in peripheral abscesses, preventing effective collapse. Figure 2 shows the results of pneumothorax. The large cavity has been diminished in size, but only the middle and lower lobes show any collapse, and two fluid levels are still plainly visible in the diseased area.

Pneumothorax as a Diagnostic Procedure

Artificial pneumothorax is also used as a diagnostic procedure to differentiate pleural and pulmonary lesions. In figure 3, 135A shows an opacity over the left half of the diaphragm and apparently in contact with the left border of the heart shadow; 135B is a film made after artificial pneumothorax. A points to the shadow of the cyst, B to the collapsed lung, and D to the overlying breast shadow. This film definitely demonstrates that the lesion was extrapulmonary. It was removed surgically and proved to be a pleuro-pericardial cyst filled with a clear fluid⁽¹⁾.

It is my opinion that this type of diagnostic procedure should be undertaken only in medical centers. Cases of artificial pneumothorax seen by physicians in smaller communities are practically always in patients with pulmonary tuberculosis.

Pneumothorax in Pulmonary Tuberculosis

Today the welfare of many thousands of people throughout the country is dependent

Read before the Section on Radiology, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 13, 1947.

1. Rigler, Leo G.: *The Chest: A Handbook of Roentgen Diagnosis*, Chicago, Year Book Publishers, Inc., 1946, p. 169.

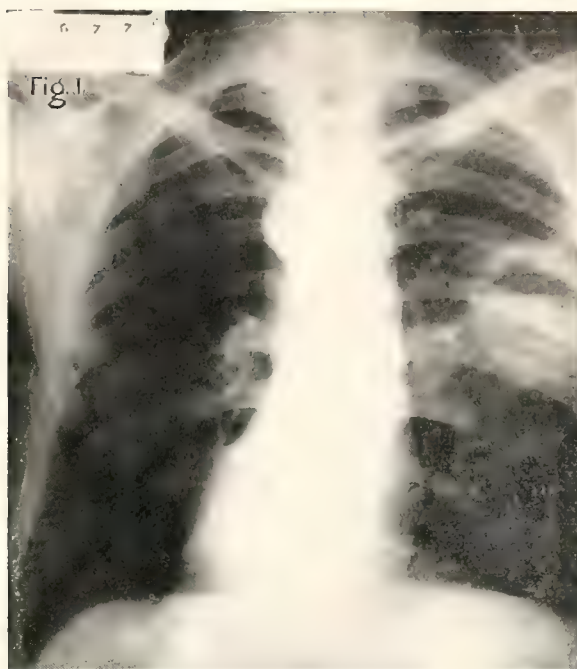


Fig. 1. Peripheral abscess before pneumothorax therapy (Courtesy of Dr. C. T. Garrenton.)



Fig. 2. The same patient after a few months of pneumothorax therapy (Courtesy of Dr. C. T. Garrenton.)

on artificial pneumothorax. Their hope for ultimate recovery and return to a useful life is based largely upon the correct handling of their case and the judicious continuation of the therapy. The radiologist thus has a heavy responsibility in these cases, and must make each examination with care. It is true that in the early months of treatment such patients are usually in a sanatorium and are cared for by the resident specialist. When they return to their homes, however, they

must look to a local physician for continued therapy, and the radiologist will often have the major part of the responsibility for guiding their treatment.

Patients who have just been discharged from a sanatorium are often apprehensive about their future. They wonder whether or not the local physician will understand their case and how he will get along with pneumothorax refills. They want, and they should have, x-ray examinations at regular inter-

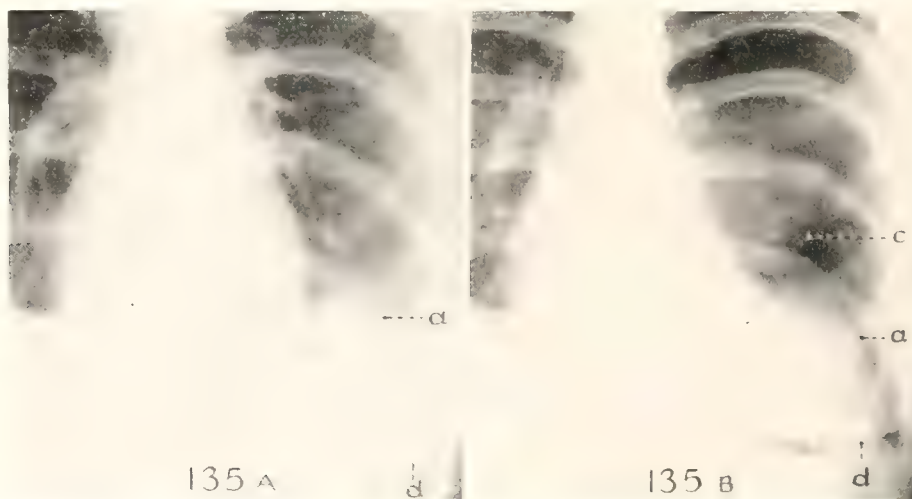


Fig. 3. X-ray before pneumothorax (135A) shows a mass overlying the left hemidiaphragm. X-ray following a diagnostic pneumothorax (135B) shows an extrapulmonary mass (a), the collapsed lung (c), and the breast shadow (d). (Courtesy of Dr. Leo Rigler⁽¹⁾)



Fig. 4. Approximately a 60 per cent collapse in all the lobes on the right. No cavities or pleural adhesions are seen.

vals. The films are important for a permanent record, and they help the physician to advise the patient about his problems of rehabilitation. The physician is asked such questions as: "Am I able to drive a car?"; "Can I start light work?"; "Can I go longer between refills?"; "Can I take a trip?"; and often, "Can I get married?" It is easy to see that unsound advice could prove disastrous. Only by a thorough knowledge of the pathologic condition of the chest can the physician answer these questions wisely.

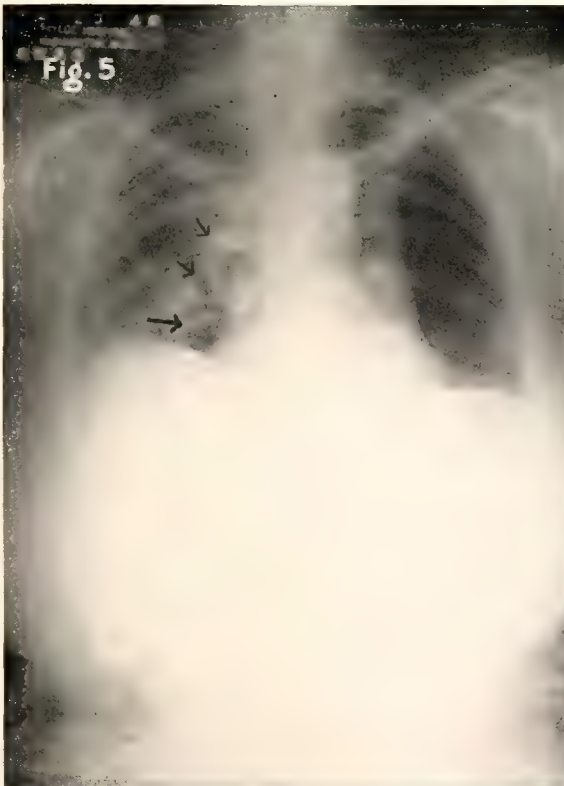
Factors important in the prognosis

The following factors should be observed at every radiologic examination in cases of pulmonary tuberculosis treated with artificial pneumothorax.

The first factor is the *mechanical effects of the collapse and the degree of compression of the lung*. Figure 4 shows approximately a 60 per cent collapse in all the lobes on the right. No cavities or pleural adhesions are seen, and there is no shifting of the mediastinum. Some thickening of the parietal

Fig. 5. An effective collapse with protrusion of the pneumothorax sac through the mediastinum into the opposite side.

Fig. 6. Same case, showing disappearance of the mediastinal hernia on inspiration.



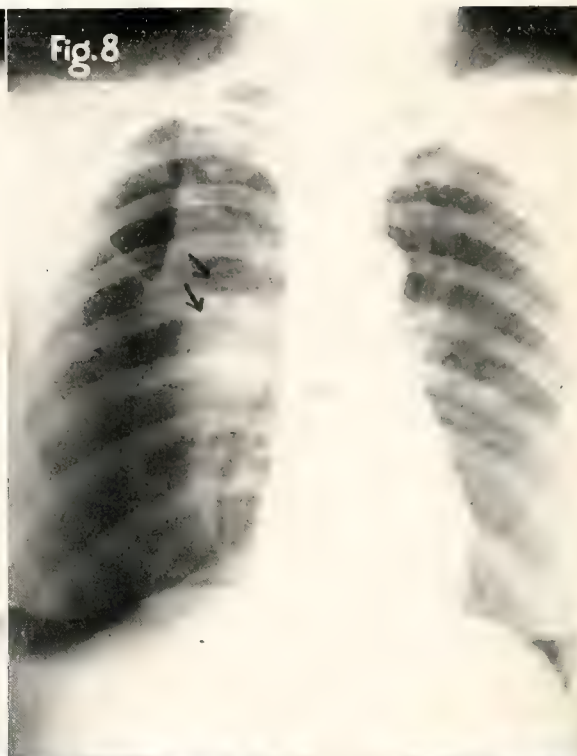


Fig. 7. Tuberculosis in the upper part of the right lung, with early cavitations in the second interspace (Courtesy of Dr. Dean Cole.)

Fig. 9. Satisfactory collapse obtained following pneumonolysis (Courtesy of Dr. Dean Cole.)

Fig. 8. Unsatisfactory collapse thought to be due to adhesions. The arrows point to open cavities (Courtesy of Dr. Dean Cole.)

Fig. 10. Extensive fibrosis limiting re-expansion of right lung. Compensatory hyperexpansion of left lung, with displacement of the heart and mediastinum into the right side of the chest.

pleura at the right base may be observed. There is no evidence of disease in the left lung. More compression is not necessary and would be unwise in this case⁽²⁾.

Figure 5 shows an effective collapse, with a protrusion of the pneumothorax sac through the mediastinum into the opposite side. The mediastinal hernia can not be seen on inspiration (fig. 6). This mechanical phenomenon is usually of no significance, although it sometimes prevents closure of a cavity.

The second factor to observe is the *effect of pneumothorax on the cavity formation*. Incomplete collapse of a cavity is the most frequent cause for failure in pneumothorax therapy. The condition of the cavity can best be determined by x-ray examination, and often the factors causing the failure can be seen.

Figure 7 shows tuberculosis in the upper part of the right lung, with early cavitations in the second interspace. Artificial pneumothorax was begun, and figure 8 shows an

2. Dick, G. F. and others: The 1946 Year Book of General Medicine, Chicago, Year Book Publishers, Inc., 1946, pp. 261-263.

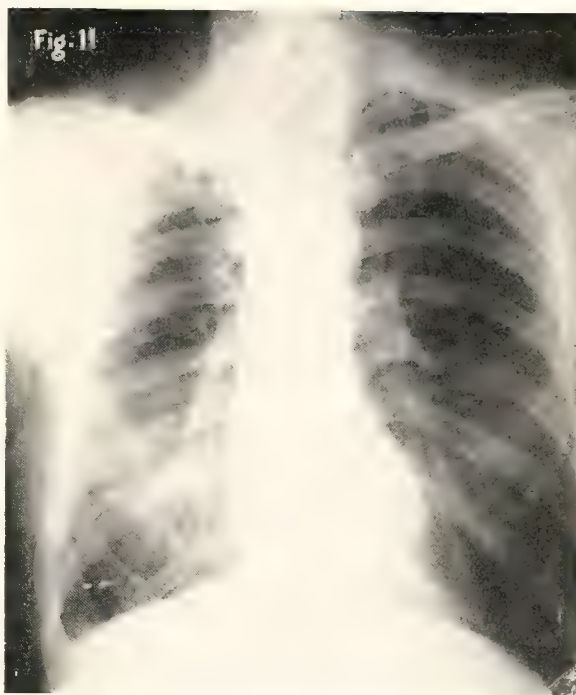


Fig. 11. Tuberculosis in the upper lobe of the right lung, with a small cavity just below the clavicle.

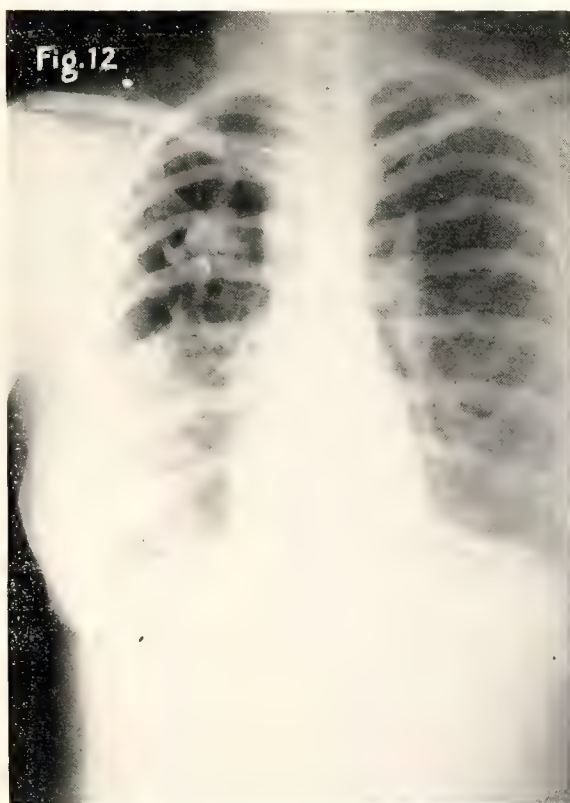


Fig. 12. Selective collapse in the upper lobe of the right lung, with comparatively healthy pleura.



Fig. 13. Satisfactory re-expansion of the lung, with only a slight shift of the upper mediastinum.

unsatisfactory collapse thought to be due to the adhesions seen on this film. The arrows point to open cavities. Pneumonolysis was done, and a satisfactory collapse was obtained (fig. 9). Figure 10 is a film made several months after pneumothorax was discontinued. The diseased lung healed with such extensive fibrosis that its re-expansion was very limited. The contralateral lung shows a compensatory hyperexpansion, with a permanent displacement of the heart and mediastinum into the right side of the chest. This patient had no complications during her treatment, continuing her work during the entire time except for four weeks while the lung was being compressed and adhesions cut. Her present condition is excellent⁽³⁾.

Figure 11 shows tuberculosis in the upper lobe of the right lung, with a small cavity just below the clavicle. The thickened pleura evident throughout this lung resulted from an old spontaneous collapse⁽⁴⁾. Because of the obliterative pleurisy it was not believed that air could be put into the pleural space in sufficient quantity to close this cavity;

pneumothorax was attempted, however, but without success.

The third factor to consider is the *character of the pleura*. The pleura is permeable to both gases and fluids. When the pleura is healthy it absorbs the injected air fairly rapidly, and refills at frequent intervals are necessary. Figure 12 shows a selective collapse in the upper lobe of the right lung. The pleura appears comparatively healthy, and this individual had to have refills every twelve to fourteen days until treatment was discontinued after five years. Figure 13 shows that the lung has re-expanded satisfactorily, with only a slight shift of the upper mediastinum.

Figure 14 shows a thickened pleura resulting from fluid and empyema in the pleural space. The mediastinum is fixed and the pleura so thick that the lung can not re-expand. Thoracoplasty is probably indicated here.

The most serious complication of artificial pneumothorax is pleuro-pulmonary perforation. In figure 15 the condition is demonstrated by the injection of an opaque oil into a pulmonary cavity which resulted from drainage of an empyema. In tuberculosis this condition results from the rupture of

3. Tice, F.: Ambulatory Pneumothorax; Results of Ten Years' Experience, *Am. Rev. Tuberc.* 46:639-644 (Dec.) 1942.

4. Niehaus, R. F.: Simple Spontaneous Pneumothorax in Apparently Healthy Individuals; A Report of 24 Cases, *Am. J. Roentgenol.* 57:12-27 (Jan.) 1917.



Fig. 14. Thickened pleura resulting from fluid and empyema in the pleural space.

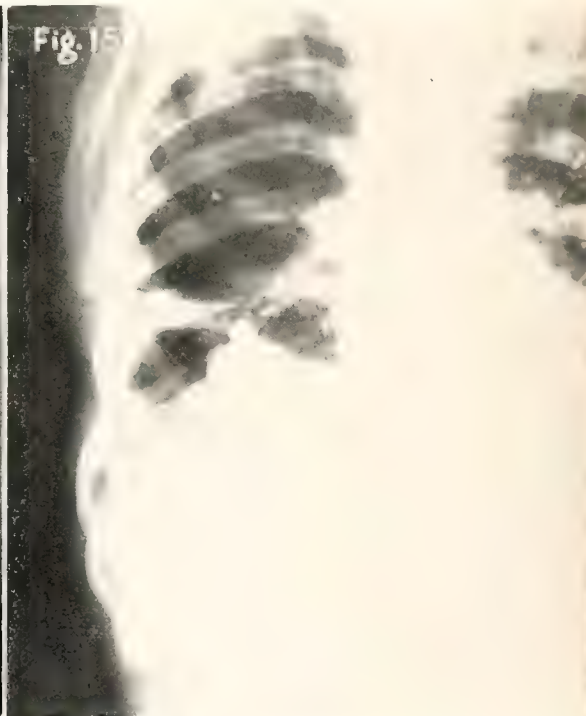


Fig. 15. Pleuropulmonary perforation (Courtesy of Dr. Frederick Mandeville.)



Fig. 16. Selective collapse of the upper lobe of the right lung, with oblitative pleurisy in the lower lobes.

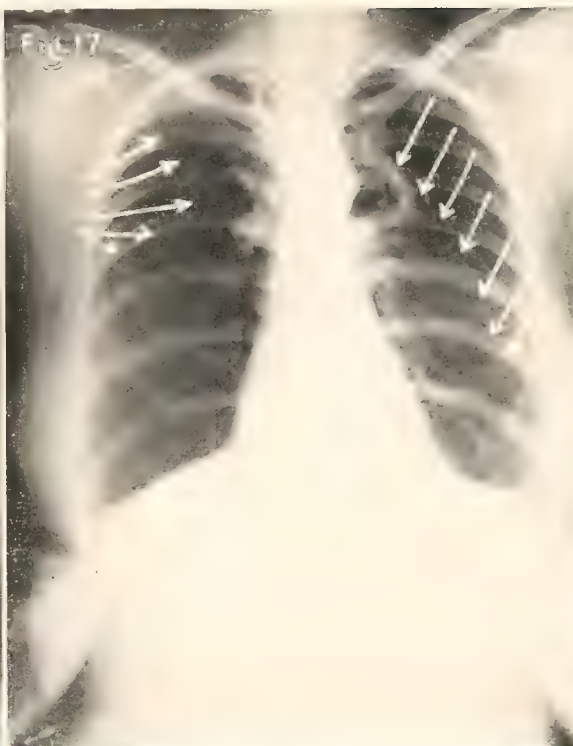


Fig. 17. Bilateral pneumothorax with oblitative pleurisy on the left.



Fig. 18. Thickened and inelastic pleura produced by pleural effusion.



Fig. 19. Hyperexpansion of functioning lung.

a cavity or a caseous area into the pleural space, from the tearing of adhesions, or from a needle wound. Sauerbuck reported 57 cases, 43 of which were fatal within a week. Of 21 cases reported by Packard, Hayes, and Blanchet only 2 patients survived⁽⁵⁾.

Figure 16 demonstrates a selective collapse of the upper lobe of the right lung, with obliterative pleurisy in the lower lobes. In this case the condition is not detrimental to the patient, since no disease is seen in the re-expanded lower lobes. Figure 17 shows a bilateral pneumothorax with obliterative pleurisy on the left. It will be impossible to continue refills on the left much longer, because the pleural space is being gradually obliterated.

The fourth factor to observe is the *presence or absence of fluid*. A large percentage of pneumothorax patients will show some fluid at some time during their treatment. The effusions are often slight and transitory, producing few or no symptoms. In some

cases, however, large effusions develop which promptly recur after aspirations. They tend to become purulent. Figure 18 shows a case in which this condition has caused the pleura to become thickened and inelastic. It is improbable that this lung can re-expand, and operative interference may become necessary.

The fifth factor to observe is the *condition of the opposite lung*. Hyperfunction of the contralateral lung is brought about by increased blood supply and hypertrophy. If there is a shift of the mediastinum to the affected side, the functioning lung may become quite large (fig. 19). Spread of the disease into the healthy lung is a serious complication which should be detected as soon as possible.

The sixth factor to observe is the *re-expanding lung*. In following a re-expanding lung by x-ray examinations we need to know the original character and extent of the disease. The most important factor in deciding when to let a lung re-expand is the type of lesion present when the treatment

5. Packard, E. N., Hayes, J. N., and Blanchet, S. F.: Artificial Pneumothorax; Its Application in the Treatment of Pulmonary Tuberculosis, Philadelphia, Lea and Febiger, 1910, pp. 153-156.

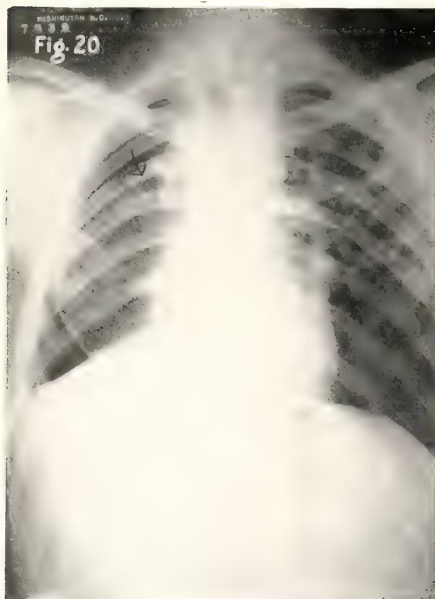


Fig. 20. Bilateral disease, with reappearance of a cavity (marked by arrow) following an attempt to let the right lung re-expand.



Fig. 21. The cavity seen in figure 20 has been obliterated by recompressing the lung.

was started⁽⁶⁾. A caseous lesion with no demonstrable cavitation does not require as long a period of treatment as do thick-walled cavities or fibrocaceous disease. When pneumothorax is being discontinued it is important to detect as soon as possible a re-expanding cavity or a spread. Fig. 20 shows a lung re-expanding on the right. In this case there was so much pathology on the left that some type of operative therapy was needed on that side. This could not be attempted, however, unless the right lung could be successfully re-expanded. Unfortunately, the reappearance of the cavity indicated by the arrow made it necessary to compress the lung again in order to close the cavity (fig. 21).

Conclusion

Artificial pneumothorax is used as a diagnostic aid and as a therapeutic agent. Most physicians are primarily interested in its use for treating pulmonary tuberculosis. X-ray films and fluoroscopic examinations made at regular intervals are essential in guiding the patient back to a useful life and maintaining him in good condition. The following factors should be observed at each examination:

1. Mechanical effects of the collapse and degree of compression of the lung.
2. Effect of pneumothorax on the cavity formation.
3. Character of the pleura.
4. The presence or absence of fluid.
5. Condition of the opposite lung.
6. Condition of the re-expanding lung.

6. Cake, C. P.: Indications for Terminating Artificial Pneumothorax, *Virginia M. Monthly*, 69:566-569 (Oct.) 1912.

The ultimate outcome in a minimal case can be favorably or unfavorably influenced by the type of follow-up observation and post-sanatorium living conditions. One must guard against relaxation of close medical supervision, an unregulated daily work tolerance, excessive social activities and economic and environmental deficiencies.—I. D. Bobrowitz, M.D., Allan Hurst, M.D. and Margaret Martin, *Am. Rev. Tbc.*, Aug., 1947.

A hospital would not fail to provide a patient with a routine urinalysis and yet it is stated that only 0.4 per cent of cases of diabetes are discovered by such a routine procedure. The amount of significant tuberculosis discovered by providing a routine x-ray is much larger. It is also said that less than 1 per cent of patients provided a routine blood count have a blood dyscrasia. Less syphilis is found by providing routine Wassermanns than significant tuberculosis by providing a routine chest x-ray.—Allen Filek, M.D., 1947 *Trans.*, NTA.

CESAREAN SECTION IN THE INTEREST OF THE MOTHER

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The primary aims of good obstetric care should be: (1) to safeguard the mother from serious injury or death; (2) to deliver a living child, free from injury, unhandicapped for its battle with life; and (3) insofar as it is consistent with the foregoing principles, to relieve labor pain.

Indications for Cesarean Section

Indications for cesarean section may be divided into fetal and maternal. Of the fetal indications, contracted pelvis with cephalopelvic disproportion, abnormal presentations with probable disproportion, and tumors blocking the birth canal are quite clear cut. Equally obvious are such maternal indications as placenta praevia, detachment of the normally situated placenta, pre-eclampsia, hypertension, chronic nephritis, and cardiac disease.

Many repeat cesarean sections and those performed in elderly primiparas are done in the interest of both mother and child. In some cases of disproportion, and especially in those where a trial labor proves unsuccessful, cesarean section must be considered in the interest of both mother and child. A difficult vaginal delivery may carry not only a distinct risk for the baby, but also the probability of serious damage to the mother.

Obstetricians have been criticized for selecting cesarean section in preference to a difficult forceps operation because the former is an easier procedure for the operator. In general, I think it may be said that the operation which is easier for the obstetrician will also be a great deal better for the patient.

Difficult vaginal deliveries are not without a considerable morbidity and occasional mortality due to hemorrhage and infection, and are certainly followed more often by chronic invalidism than is cesarean section.

A comparison of tables 1 and 2 shows that the percentage of cesareans performed for

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Table 1

Indications for Cesarean Section

944 Cases at the New York Lying-In Hospital
From Stander's Textbook of Obstetrics⁽¹⁾

Contracted pelvis	33%
Antepartum bleeding	13%
Toxemia and allied conditions	8.4%
Previous cesarean (febrile puerperium)	11.8%
Disproportion	8.3%
Cardiac disease	3.4%
Abnormal presentations	3.4%
Tumors: ovarian cyst, cervical cancer, myoma, etc.	3.6%
Cervical dystocia	2.5%
Elderly primipara	5.1%
Ruptured uterus	0.6%
Tuberculosis: renal 2, pulmonary 5, hip 1	0.8%
Various	6.1%

Table 2

Indications for Cesarean Section

251 Cases at the Chelsea Memorial Hospital and
Other Boston Hospitals between January 1, 1942
and June 30, 1947 (Author's Series)

Disproportion (including cases given test of labor)	154	60.3%
Primiparous breech and doubtful pelvis	9	3.5%
Previous cesarean (chiefly cases of disproportion)	37	14.7%
Fibroids obstructing delivery	2	0.8%
Previous extensive repairs	3	1.2%
Elderly primiparas (40 or over)	13	5.1%
Placenta praevia and separated placenta	24	9.5%
Pre-eclampsia, nephritis, hypertension, etc.	9	3.5%

purely maternal indications — antepartum bleeding, toxemia, and heart disease—was 24.8 in Stander's series, 14.2 in my own, including the patients with previous extensive repair. If those operations done for the benefit of both the mother and child are included, Stander's percentage of cesareans done wholly or partly in the interest of the mother is raised to 42.5, and my own percentage to 34.

My series of cases consisted exclusively of private patients, and extraordinary efforts were made to ensure the safety of both mother and child. Where doubt existed, cesarean section was done.

Forecasting the Outcome of Labor

Many factors enter into the outcome of labor. The most important of these are the size and type of the pelvis, and the size, presentation, and position of the fetus. Of great importance also are the age of the mother, the muscular development of the pelvic floor, the elasticity of the cervix, the

strength of the uterine contractions, and the molding of the fetal head.

Some of these conditions can be determined only after an adequate test of labor. Each obstetric case is a problem to be considered individually, and can not be evaluated by a set of fixed rules. The age of the patient is a factor almost as important as the size and form of the pelvis. A primipara with a slightly undersized pelvis may have a successful labor if she is in the early twenties, whereas a similar patient in the middle thirties will not be able to have a vaginal delivery.

An endeavor should always be made to forecast the outcome of labor by careful antepartum examinations, including, when necessary, roentgen pelvimetry. When the outcome cannot be predicted accurately, however, one should not hesitate, under good aseptic conditions, to submit the patient to a test of labor. The prophylactic and therapeutic uses of penicillin and the sulfonamide drugs have so reduced the danger of abdominal delivery that, even in circumstances where the previous aseptic conditions may have been doubtful, one can resort to cesarean section without hesitation.

Pelvimetry

The type of the pelvis is important. In 1922⁽²⁾ I published the first article on normal variations in the female pelvis and their obstetric significance. I recognized and described at that time the two types now known as the gynecoid and android. Later Caldwell and Moloy⁽³⁾ added two more main types—the anthropoid and the platypelloid.

This classification into four groups has been of the greatest help in practical obstetrics. The gynecoid is, of course, the typical female pelvis, as described in the older obstetric textbooks, with thin bones, an elliptical or blunt heart-shaped inlet, and a wide arch. This type is found usually in the women of small build, although it sometimes occurs in obese and occasionally in large women. Many slight women give birth to large babies quite easily. Incidentally, the fact that these women usually have less well developed muscles and fasciae also helps to

2. Williams, J. T.: Normal Variations in the Female Pelvis and Their Obstetrical Significance, *Am. J. Obst. & Gynec.* 3:345-351 (April) 1922.

3. Caldwell, W. E. and Moloy, H. C.: Anatomical Variations in the Female Pelvis and Their Effect in Labor with a Suggested Classification, *Am. J. Obst. & Gynec.* 26:179-305 (Oct.) 1933.

1. Stander, H. J.: *Textbook of Obstetrics*, ed. 3, New York and London, D. Appleton-Century Co., 1943, p. 1082.

make their labor easier.

The android type of pelvis, as the name implies, has certain male characteristics, such as heavy bones, a V-shaped arch, and often a triangular or otherwise contracted inlet. Many of these patients, however, have a good inlet, with flaring hips and large external measurements. This type of pelvis is usually found in large, rather muscular women.

The anthropoid or ape-like pelvis is characterized by narrow transverse measurements but by long anteroposterior diameters. The bones are usually thin and the arch has a tendency to the V-shape. The posterior sagittal diameter of the outlet is usually ample, so that, although posterior positions of the occiput are unusually common in this type of pelvis, serious dystocia seldom occurs.

The fourth, or platypelloid type, is really a simple flat pelvis with ample dimensions. A long transverse diameter compensates for any reduction in the anteroposterior measurements.

There are many individual variations in these four types of pelvis, and Caldwell has added several sub-groups: android-anthropoid, android-flat, anthropoid-gynecoid, gynecoid-flat, and others. It seems to me that these sub-classifications confuse rather than clarify the picture.

It is quite easy to recognize the four main types of pelvis by ordinary obstetric examination. X-ray pelvimetry, while desirable, is not absolutely necessary except in cases of suspected disproportion, or where there may be some doubt about the presentation of the fetus.

Thoms⁽⁴⁾ of New Haven, who pioneered in radiographic pelvimetry, devised the Thoms grid—a lead plate with perforations at intervals of 1 cm. to allow accurate measurement of the superior strait.

In practice I have found the system of prenatal roentgenology worked out by Dr. Samuel A. Robins of Boston, while he was roentgenologist at the Boston Lying-In Hospital, very satisfactory. Robins' method is based on a combination of the Thoms technique and the Caldwell classification. It affords accurate measurements and a knowledge of the type of pelvis, both of which are important in predicting the course of labor.

In the routine examination two films are taken: first, an anteroposterior view using the Thoms grid, with the superior strait parallel to the x-ray film; and second, a lateral film with the notched centimeter scale placed between the buttocks. Thus accurate internal measurements are obtained, and if the patient is near term the relation of the presenting part to the pelvic inlet is also clearly defined. Other important points observed are the thickness of the pelvic bones, the inclination of the sacrum, and the size of the sacro-sciatic notch.

I should like to bring out one more point about radiographic pelvimetry. After the observation of many labors following prenatal roentgenology, I am convinced that the figures given as normal for the internal diameters, and especially for the anteroposterior diameter of the inlet, should be revised upward. My experience has given me the conviction that 11 cm. is not the average normal for the true conjugate, but the lower limit of normal. I believe that the normal true conjugate is about 12 cm., and that any measurement below 11 cm. shows a definite contraction. The average transverse measurement is probably nearer the textbook figure of 13.5 cm.

Indications for Cesarean Section in the Interest of the Mother

Antepartum bleeding

Among the maternal indications for cesarean section, antepartum bleeding is of first importance. When premature separation of the placenta occurs in a patient who is not in labor and who has no dilatation of the cervix, cesarean section with transfusion is a life-saving operation for the mother. In patients with the so-called Couvelaire uterus a Porro operation might be indicated occasionally, but prompt recognition of the placental separation will render such an operation unnecessary and may result in saving the life of the child also.

Placenta praevia

There appears to be a remarkable unanimity of opinion that cesarean section is the treatment of choice in complete placenta praevia in the primipara, and even in multiparous patients. In the partial or even the marginal varieties of placenta praevia the amount of bleeding and the degree of dilatation of the os should decide the method of

1. Thoms, H.: Routine Roentgen Pelvimetry in 600 Primiparous White Women Consecutively Delivered at Term. *Am. J. Obst. & Gynec.* 37:101-106 (Jan.) 1939.

treatment. Bleeding can be just as severe from a partial or even a marginal placenta praevia as from a complete placenta praevia. The obstetrician's first duty is to save blood. Where there is active bleeding, cesarean section offers the quickest method of control.

Toxemias of pregnancy

In the group of cases characterized by albuminuria and hypertension, and including pre-eclampsia, eclampsia, essential hypertension, and chronic nephritis, the decision to perform cesarean section will depend in part upon the severity of the condition, and to a still greater extent upon mechanical factors affecting delivery. In spite of the remarkable work which has been done on prenatal care, blood chemistry, and endocrine changes, there is still only one cure for pre-eclampsia, and that is delivery of the fetus.

In a mild or moderate case of pre-eclampsia in a young patient who is near term, whose cervix is soft, and in whom no cephalopelvic disproportion exists, simple rupture of the membranes, with or without the aid of castor oil and quinine and small doses of Pitocin, is usually adequate. Pituitary extracts containing the pressor factor should be avoided. Ergonovine should be used with care, and the blood pressure should be checked carefully after its administration.

On the other hand, if the patient is a primipara in her thirties who is not near term and who has a long, tight cervix, a rapidly rising blood pressure and increasing albuminuria, cesarean section under spinal anesthesia is indicated. In cases intermediate between these extremes, all the factors involved must be carefully weighed. Fixed rules can not be laid down, but if the outlook is not good for a reasonably quick delivery, a cesarean operation is usually indicated.

The anesthetic is of prime importance. General anesthesia is definitely contraindicated because it disturbs the blood chemistry, and has a toxic effect on the liver and kidneys. Spinal anesthesia does not affect the blood chemistry, the liver or the kidneys. In fact, by lowering the blood pressure and relaxing the spasm of the arterioles, it has a definitely beneficial effect.

When the condition has advanced to the convulsive stage, some modification of the Stroganoff⁽⁵⁾ regimen is indicated, accom-

panied by the intravenous administration of hypertonic glucose solution, and concentrated magnesium sulfate solution either intramuscularly or intravenously. The time for delivery is when the patient ceases to improve under medical treatment. This is a matter for nice judgment, but many of these patients can be saved by cesarean section under spinal anesthesia who would otherwise be lost.

Heart disease

In patients with heart disease I feel that cesarean section has perhaps been overdone, possibly because it offers a favorable opportunity to sterilize the patient.

Young patients with well compensated rheumatic heart disease may go through two or three normal pregnancies and labors under good care without danger. Where mechanical difficulties are present, the patient must be protected from the undue strain of a difficult labor by an elective cesarean operation. In older patients and primiparas who have suffered some decompensation, a cesarean section will usually be indicated. Such patients should usually be protected from further pregnancies by sterilization.

The successful management of cardiac cases calls for the closest cooperation between the obstetrician, the cardiologist, and the anesthetist.

Neoplasms

Except for cervical cancer, neoplasms complicating pregnancy present a fetal rather than a maternal indication for cesarean section. If the tumor is so located as to obstruct delivery or to interfere with normal uterine contractions, a cesarean operation is indicated. It should never be done simply as a step toward removing the neoplasm, however.

Operative Technique

During the five and one half years from January 1, 1942, to June 30, 1947, in which my operative technique has been standardized, I have performed 251 cesarean sections without a maternal death. The operative technique has closely followed the low transverse cesarean described by Munro Kerr. I believe that the prophylactic use of penicillin and the sulfonamide drugs makes this simple technique applicable to all cases and renders unnecessary the complicated extraperitoneal

5. Stroganoff, T. W.: Ueber die Behandlung der Eklampsie, Zentralbl. f. Gynaek. 21:1309, 1901.

techniques devised by Latzko and by Waters. The Porro operation should be restricted to those cases in which removal of the uterus because of fibroid tumors complicating pregnancy is indicated.

A four-inch median incision is made just above the symphysis pubis. The utero-vesical peritoneum is incised transversely and the bladder separated from the lower segment of the uterus. The uterus is opened transversely because only a transverse incision can be kept within the lower segment. The fetus is delivered, and the placenta comes away spontaneously or is expressed. The uterus is closed by two layers of continuous suture, the first one being interlocked with care to include all open sinuses. The bladder peritoneum is overlapped on the uterine peritoneum, and the abdomen is closed.

Certain points of technique are important to the success of the operation:

1. Spinal anesthesia is chosen in most cases because it has no effect on the baby, and because of the excellent relaxation obtained.

2. Preoperative medication should be minimal because of the effect on the baby. Scopolamine, 1/150 of a grain, is given one hour before the operation.

3. Before the incision is started, all instruments to be used in the early stages of the operation should be checked by the operator and laid out so that they can be placed in his hand in order without loss of time. All needles to be used in the operation should be threaded in advance. The suction apparatus should be turned on.

4. Immediately before the skin incision is made, 0.5 cc. of pituitary extract is given intramuscularly in the shoulder. While the uterus is being incised, one ampule of ergonovine is given intravenously. These two oxytocics produce prompt contraction of the uterus and reduce bleeding to a minimum.

5. The placenta often separates spontaneously, or it may be expressed by Crede's method, pressure being applied through the abdominal wall just as after a vaginal delivery.

6. If the patient is nervous or restless, 1/6 grain of morphine may be given intravenously at any time after the birth of the baby.

7. All steps of the operation should proceed with deliberation and precision. The only part of the operation in which haste is required is during the suture of the uterine incision.

8. Additional intravenous ergonovine should be given if bleeding is excessive.

Conclusions

Fourteen to 24 per cent of cesarean sections are performed in the interest of the mother, for such indications as antepartum hemorrhage, pre-eclampsia and allied conditions, heart disease, carcinoma of the cervix, and other neoplasms.

If to these indications are added primiparity in an elderly patient, previous cesarean section, and previous extensive repair operations, the percentage of operations performed in the interest of the mother is raised to 34-42 per cent.

In cases where there are possible mechanical indications for cesarean section, consideration should be given to the future welfare of the mother as well as to the safety of the child.

Attention to many important details of technique has made cesarean section probably safer for the mother than a difficult vaginal delivery.

429 Beacon Street.

The shortage of scientific personnel.—In our usual way when we set out to do a job, we do it to the exclusion of everything else—the long-term considerations always can go hang. We set out to do the job of winning the war to the whole extent of our ability to contribute to victory, and that is the job we did. We stopped almost completely the training of men not only in fields of science and technology but in all fields. With the exception of students of medicine and engineering in Army and Navy programs and some 2,400 men on the reserve list who were taken from their studies for civilian war research, all physically fit students, graduate and undergraduate, and those ready for college over 18 years old, were taken into the armed forces and were kept there. This went on for five years. What you take five years to undo in reference to training people for a vital function in the Nation's interest, you cannot make up in any lesser amount of time. And unless you do twice as much training for five years following the five blank years as you were doing before those years, you are going to lose up to five years of production of scientists. This is just elementary arithmetic and, furthermore, serious as arithmetic shows the situation to be, there is no doubt that a higher calculus, if it could be made, would show it to be still more serious.—Henry Allen Moe: *The Shortage of Scientific Personnel*, Science 105:195 (Feb. 21) 1947.

PAROXYSMAL COLD HEMOGLOBINURIA

Report of Two Cases

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Paroxysmal cold hemoglobinuria is a condition characterized by hemolysis of red blood cells and excretion of hemoglobin in the urine following exposure to cold. It is considered a manifestation of congenital or late acquired syphilis. In 1866 Gull⁽¹⁾ recognized the relationship of hemoglobinuria to cold, and in 1880 Murri⁽²⁾ emphasized the fact that patients with paroxysmal cold hemoglobinuria frequently had syphilis. Mackenzie⁽³⁾ stated that in 30 per cent of such cases clinical examination revealed evidence of syphilis, and that with the Wassermann test it was possible to demonstrate syphilitic infection in more than 90 per cent. Donath and Landsteiner⁽⁴⁾ found that there was evidence of syphilis in 95 of the 99 cases reported in the literature between 1906 and 1925; there was a positive Wassermann reaction in 81, and clinical evidence or a history of syphilis in 24.

Mechanism of Hemolysis

In 1904 Donath and Landsteiner⁽⁵⁾ demonstrated the mechanism of the intravascular hemolysis when they found that the serum or plasma of these patients contains an auto-hemolysin which unites with the red blood cells at a low temperature, causing lysis when the cells are subsequently warmed. The origin of the autohemolysin is unknown, but it is suggested⁽⁶⁾ that it is produced in response to an antigen liberated from the spirochetes, from organs infected by syphilis, or from both. There is no explanation as to why some patients with syphilis develop auto-

hemolysins and others do not. Autohemolysins may be present in a small percentage of cases of late syphilis without clinical symptoms of hemoglobinuria.

Symptoms and Signs

The clinical manifestations of this condition are classical. Following exposure to cold, either general or local, the patient experiences within a very short time chilliness, nausea, malaise, weakness, pains in the abdomen, legs and back, paresthesias of various parts of the body, and a rise in temperature of one to four degrees. Vasomotor disturbances such as urticaria, fluctuating blood pressure, and Raynaud's phenomenon may occur. One to four hours after chilling the urine becomes dark red or mahogany in color, but usually returns to normal within five to eight hours. Within a few hours after the patient removes himself to a warm environment, all symptoms disappear, except for mild nausea and lassitude, which persist for twenty-four to thirty-six hours. If a large number of red blood cells are hemolyzed, the sclerae and skin may show transitory icterus. Between paroxysms the patient is perfectly normal. Physical examination may reveal stigmas of syphilis, and the liver and spleen are sometimes palpable during an attack.

Laboratory Findings

Significant laboratory findings are related to the blood and urine. The Donath-Landsteiner test is positive. Positive Kahn and Wassermann tests can be demonstrated in the majority of cases. During a paroxysm the blood serum and urine contain hemoglobin. The urine is dark red to mahogany in color; it contains albumin and casts, and a few red blood cells may be demonstrated. The blood serum is colored pink or red, and the icterus index and bilirubin rise. Spectroscopic examination of the urine reveals that the color is due to oxyhemoglobin, methemoglobin, and sometimes hematin. Moderate leukocytosis usually accompanies the paroxysms, and is followed by leukopenia and relative lymphocytosis.

Treatment

Numerous forms of treatment for this condition have been tried, but only anti-syphilitic therapy has proven of definite benefit. Untreated patients continue with recurrences of hemolytic episodes for years,

1. Gull, W. W.: Intermittent Hematuria. Guy's Hosp. Rept. 3rd ser. 12:381-392, 1866.
2. Murri, A.: Riv. clin di Bologna, No. 2, 3, 1880; quoted by MacKenzie.
3. MacKenzie, G. M.: Paroxysmal Hemoglobinuria: A Review. Medicine 8:159-191 (May) 1929.
4. Donath, J. and Landsteiner, K.: Ueber Kältehemoglobinurie. Ergebn. d. Hygiene 7:184, 1925.
5. Donath, J. and Landsteiner, K.: Ueber Paroxysmale Hämoglobinurie. Muench. med. Wchnschr. 51:1590-1593 (Sept. 6) 1904.
6. Nanba, M.: Ueber die kuenstliche Erzeugung des Auto-hemolysins. Deutsche med. Wchnschr. 51:594-595 (April 10) 1925.

but with intensive and prolonged treatment for syphilis the attacks may cease and the autohemolysins disappear from the blood or decrease in titer.

Case Reports

Case 1

A 36-year-old white male of German-Irish extraction was admitted to the Regional Hospital, Fort Bragg, North Carolina, on November 15, 1944, with the complaint of passing "bloody urine" each time he had been chilled by exposure to cold during the past twelve years. This had occurred on three occasions during his army service of one month. Symptoms of nausea, a feeling of fullness in the upper abdomen and lower chest, chilly sensations followed by profuse sweating, and pain in the back and extremities had been associated with each attack, and had preceded the appearance of red urine by two to three hours. The patient had learned that if he went to bed and got warm all symptoms would subside within four to five hours. The attacks had occurred mainly in the winter, but occasionally had been precipitated by getting his feet wet in summer. Hemoglobinuria was never experienced after drinking cold fluids, and the attacks were not related to long walks or other physical exertion. There was no history of anemia. He had frequently noticed that his eyes were yellow after he had had several paroxysms in rapid succession.

Blood Wassermann and Kahn tests performed when the patient was inducted into the army in October, 1944, had been positive. The spinal fluid was normal. He was started

on antisyphilitic therapy, and had received seven intravenous injections of mapharsen and three intramuscular injections of bismuth prior to admission to the hospital. He had no knowledge as to when he might have contracted syphilis, and denied ever having had a penile lesion or skin rash. Two years before he entered the army, a Wassermann test was done by his physician, who informed him that it was negative. There was no history of syphilis in his parents. After he was informed that he had syphilis, his wife and two children (both apparently healthy) were examined for this disease and were found to have negative serologic tests. The family history was otherwise irrelevant.

Physical examination revealed a moderately obese individual with tattoo marks on both upper extremities. The systolic blood pressure varied between 140 and 110, and the diastolic pressure between 90 and 75 over a period of three days. A functional systolic murmur was heard at the apex of the heart. There were no findings to suggest congenital or late syphilis. The neurologic examination was negative.

The Donath-Landsteiner test and the Wassermann and Kahn reactions of the blood were positive. Repeated urinalyses were negative. The renal function as measured by urea clearance was 115 per cent of average. A phenolsulfonphthalein kidney function test revealed an output of 22 per cent in fifteen minutes, and a total of 67 per cent in one hour.

The red cell count was 4,990,000 and the hemoglobin was 14.8 Gm. by photoelectric

Table 1

Laboratory Studies of the Blood Serum and Urine Before and After Chilling in Case 1

SPECIMEN and TEST	BEFORE CHILLING	AFTER CHILLING (Feet in Ice Water for 10 Minutes)			
		1 Hour	3 Hours	5 Hours	7 Hours
Blood Serum					
Color	Normal	Pink	Faint pink	Yellow	Yellow
Icterus index	9	25	34	28	22
Van den Bergh					
Direct	Negative	Negative	Negative	Negative	Negative
Indirect	0.2 mg./100 cc.	1.7 mg./100 cc.	4.5 mg./100 cc.	3.6 mg./100 cc.	2.4 mg./100 cc.
Urine					
Color	Straw	Amber	Dk. reddish brown	Amber	Amber
Reaction	Acid	Acid	Acid	Acid	Acid
Specific Gravity	1.022	Q. N. S.	1.008	1.005	1.011
Albumin	Negative	+	++	Trace	Sl. trace
Benzidine	Negative	++++	++++	+++	Trace
Bile	Negative	Negative	Negative	Negative	Negative
Microscopic	Normal	Numerous granular casts	Normal	Normal	Normal

determination. The white blood cells numbered 9,650, and the differential count showed 68 per cent polymorphonuclear leukocytes and 32 per cent lymphocytes. The hematocrit was 45 per cent. The reticulocytes numbered 2.3 per cent, and the platelets 225,000. The venous clotting time was fourteen minutes and the bleeding time was five and one half minutes. The red blood cell fragility test was normal. His blood group was O, and he was Rh-negative.

The total serum proteins were 8.1 Gm. per 100 cc., with 5.1 Gm. of albumin and 3.0 Gm. of globulin, the albumin-globulin ratio being 1.7. The blood nonprotein nitrogen was 33 mg. per 100 cc., and the cholesterol 169 mg. per 100 cc.

Roentgenograms of the lungs and skull, and of the entire spine and pelvis were normal. Numerous well-defined gallstones were demonstrated by a flat plate x-ray of the abdomen.

This patient was unusually sensitive to cold, and a paroxysm could be precipitated by exposure to a temperature of 30-40 F. for fifteen minutes. On three occasions the patient was asked to place his feet in ice water for ten minutes. Each time an attack of hemoglobinuria, with the associated symptoms previously described, was produced. Table 1 shows the rise in the icterus index and serum bilirubin and the urinary abnormalities which were characteristic of each experiment. Spectroscopic examination of the serum and urine revealed reduced hemoglobin (oxyhemoglobin).

Case 2

A 30-year-old soldier of Italian extraction, with two weeks' military service, was admitted to the Regional Hospital, Fort Bragg, North Carolina, on December 4, 1942, complaining of the passage of "blood in the urine" following exposure to cold during calisthenics. A urinalysis done prior to hospitalization showed a 4 plus reaction for albumin, a positive (4 plus) benzidine test and many granular casts and red blood cells. A tentative diagnosis of nephritis was made.

The history revealed that he had voided dark, brownish-black urine after exposure to cold on numerous occasions since early childhood. His mother had noted this phenomenon when he was a few weeks old, and the patient recalled that since the age of 6 exposure to cold for thirty to forty minutes dur-

ing the winter months would produce attacks of generalized aching and malaise, and his urine would be dark "brownish-black" for a period of five to six hours. He had learned that such attacks could be prevented by dressing in extra heavy clothing if he were out of doors for long periods of time during cold weather.

In 1937, because of the newspaper publicity given the venereal diseases, the patient had a blood Wassermann test performed. This was reported positive, and during the next year he received fifty-two intravenous and fifty-two intramuscular "shots" at weekly intervals. A Wassermann test was negative following this therapy, and he had no further treatment until 1939, when a serologic test for syphilis was again found to be positive. He received an additional forty intravenous and forty intramuscular "shots" at weekly intervals. A Wassermann test of the blood following this treatment was negative, and tests of his blood and spinal fluid made just before he entered military service were negative for syphilis. He gave no history of a chancre or skin eruption, and the family history was negative for syphilis.

Physical examination revealed a well developed and nourished male in no acute distress. The temperature was normal. There were no stigmas of acquired or congenital syphilis. Complete physical and neurologic examinations were negative except for occasional premature heart beats.

Urinalyses were normal, except for the presence of pus cells (few to numerous) over a period of several days. Blood counts and a fragility test of the red blood cells were normal. Serologic tests of the blood for syphilis revealed one positive Wassermann, one negative Wassermann, three doubtful Kahns, and two positive Kahns. The spinal fluid was normal. A Donath-Landsteiner test was positive. Kidney function, as measured by phenolsulfonphthalein and urea clearance tests, was within normal limits. The blood nonprotein nitrogen was normal. Cystoscopic examination and a retrograde pyelogram revealed no evidence of disease in the upper or lower urinary tract. An electrocardiogram was normal except for premature contractions. A roentgenogram of the heart and lungs was normal.

It was the opinion of the venereal disease consultant that the patient had received ade-

quate treatment for syphilis. Antisyphilitic therapy had not altered the attacks of hemoglobinuria, either in frequency or severity.

On several occasions the patient was asked to place his hands and feet in ice water for fifteen minutes. Each time an attack of paroxysmal hemoglobinuria was produced, and the urine passed for two to six hours after each experiment was dark, reddish-brown; it contained albumin and gave a 4-plus reaction to benzidine, though no red blood cells could be demonstrated in any specimen.

Comment

Paroxysmal cold hemoglobinuria has been considered a rare condition. In 1932 McCarthy⁽⁷⁾ stated that less than 300 cases had been reported. Since, in a relatively short period of time, the condition has been encountered in 2 individuals who stated that they had been treated by numerous physicians, none of whom had detected the true nature of their illness, one might surmise that this assumption of rarity may be due to the low index of suspicion on the part of the physician for paroxysmal cold hemoglobinuria.

It also appears to us that the rather universal assumption that paroxysmal cold hemoglobinuria is usually, if not always, a manifestation of syphilis is open to some question. There was no evidence of syphilis, except positive serologic tests, in the 2 cases we are reporting, and the diagnosis of syphilis in a large percentage of the cases in the literature seems to be based only on this finding. It is possible that the positive serologic tests for syphilis encountered in many cases of paroxysmal cold hemoglobinuria may be biologic false-positive reactions. Neurath and coworkers⁽⁸⁾ report promising new serodiagnostic methods for differentiation between syphilitic and biologic false-positive sera, and it is suggested that these tests be applied in cases of paroxysmal cold hemoglobinuria encountered in the future.

7. McCarthy, Francis P. and Wilson, Robert, Jr.: Paroxysmal Hemoglobinuria. Report of Cases, with Familial Findings. *New England J. Med.* 207:1019-1022 (Dec. 8) 1932.

8. Neurath, H., and others: The Serological Diagnosis of Syphilis. *Science* 101:68-69 (Jan. 19) 1945.

The steadily increasing industrial employment of women in this country has not as yet been reflected in a higher tuberculosis mortality in women, even at the ages of highest susceptibility.—Henry D. Chadwick, M.D. and Alton S. Pope, M.D., *The Modern Attack on Tuberculosis, The Commonwealth Fund, Revised, 1946.*

ALCOHOLIC BEVERAGES AND ALCOHOLISM

FREDERICK R. TAYLOR, M.D., F.A.C.P.

HIGH POINT

Many of the data presented here are taken from the recent collection of lectures given at the Yale Summer School of Studies on Alcohol and published in book form under the title of *ALCOHOL, SCIENCE AND SOCIETY* by the *Quarterly Journal of Studies on Alcohol*⁽¹⁾.

In this book Dr. Jellinek states that there are about 100,000,000 men and women of drinking age (15 years and over) in the United States, about one half of whom use alcoholic beverages. Of these, about 3,000,000 use alcohol excessively, running a serious risk of becoming compulsive drinkers and of developing chronic alcoholic disease.

Physiologic Effects of Alcohol

Haggard says that in ordinary alcoholic beverages, ethyl alcohol is the only alcohol of importance, and that even amyl alcohol, the much berated fusel oil, is of no significance. In a man weighing about 150 pounds ethyl alcohol is oxidized by a normal liver at the rate of about 7 to 10 Gm. per hour—that is, the amount in about 0.6 to 0.8 fluid ounces of whisky. During the process, the very toxic acetaldehyde is formed, but is oxidized so fast that it has no detectable effect on the individual. Adulterants such as wood alcohol are excluded from this discussion.

Unlike sugar and fat, alcohol cannot be stored in the body. Though oxidized continually as long as it is in the body, it is practically always ingested faster than it can be oxidized, so that some of it is eliminated in the breath and urine.

While undiluted distilled liquors cause severe local irritation of the mucous membranes from the mouth to the stomach, there is, according to Haggard, little irritation from alcohol in concentrations of less than 15 or 20 per cent, and none below 5 or 6 per cent. Haggard also states that about 30

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From the Department of Internal Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina.

1. *Alcohol, Science, and Society*, New Haven, Connecticut, *Quarterly Journal of Studies on Alcohol*, 1945.

or 40 per cent of the alcohol swallowed may be absorbed directly through the stomach wall, though most food and drink are not. The rest is absorbed, as are most other things, through the intestinal wall. If the alcohol content of the beverage is more than 4 or 5 per cent, the stomach secretes fluid which dilutes it down to that strength. Alcohol taken on an empty stomach is of course absorbed much faster than alcohol taken with a meal.

Haggard says that deaths from bad boot-leg liquor were due to wood alcohol, not to fusel oil, as some claimed. He also states that taking two or more kinds of drinks in succession causes no more intoxication than taking two or more drinks of the same kind, with equal alcohol content, in equal amounts, and under like conditions.

The intoxicating level of alcohol in the blood

Even in severe intoxication, the alcohol concentration in the blood stream is low, for 0.7 to 0.9 per cent is a fatal level. This concentration is very rarely reached, since stupor usually intervenes and prevents the subject from drinking a lethal amount.

The concentration of alcohol in the blood is important medicolegally. According to Greenberg, if it is 0.05 per cent or less, a person is definitely *not* under its influence to a degree where he cannot safely operate a motor vehicle. If it is 0.15 per cent or more, he definitely *is* under its influence. Between these levels, some persons are intoxicated and some are not, according to individual susceptibility. Many believe that the law should make 0.05 per cent the legal limit for driving.

Since the concentration of alcohol in the blood bears a fixed ratio to that in the breath, the blood does not have to be taken to determine its alcohol content. Greenberg has devised a practically fool-proof "alcoholometer" which tests the breath, makes automatic records, and expresses the results in terms of blood concentration. It can be operated by any intelligent police officer. If anything goes wrong, either no record is made, or the error is in favor of the accused, so that he cannot be wrongly convicted by the instrument. It is legalized in Connecticut and used by the state police there.

Effects of alcoholic excess

It is obvious that the concentration of alcohol in the blood is too low to be dehydrat-

ing. The most probable explanation of intoxication is that alcohol disturbs oxygen metabolism in the cells. The symptoms are very like those produced by flying at high altitudes without oxygen.

It is superfluous to point out to this audience that alcohol is not a stimulant, but a depressant, or that most physical diseases produced by alcoholism are due in part, at least, to a vitamin lack. Jolliffe says that we do not yet know how alcoholic wet brain and Korsakoff's psychosis are brought about, but cirrhosis of the liver, multiple neuritis, Wernicke's disease (acute hemorrhagic polioencephalitis), delirium tremens, and alcoholic pellagra are due especially to the lack of thiamine or niacin. These deficiencies may be caused in two ways. Whisky, since it cannot be stored and is totally devoid of vitamins, replaces food only in energy-production. The whisky drinker is not likely to eat as much as usual; even if he does, however, storing as fat or glycogen the food not used as energy or protein replacement, we now know that there is a direct relationship between caloric intake and vitamin requirement. The more calories we take, the more vitamins we need. This finding explains the hitherto puzzling fact that avitaminoses do not occur in total starvation. When too many *extra* calories are ingested as alcohol, the normal vitamin intake becomes inadequate. The fact that many conditions, such as polyneuropathies, may become irreversible, however, suggests that alcohol in itself may be a destructive nerve poison.

It is well known that 3 ounces of whisky will usually impair efficiency. Occasionally a paradoxical reaction may occur, as Jellinek shows, in the following manner: A young man, practicing marksmanship alone, makes a score of 10 without alcohol. Alcohol brings his score down to 7. In competition, however, the man "gets rattled" without alcohol, and his score is only 4. Alcohol inhibits his conflicts due to shyness and embarrassment, and brings his score up to 7, but never to 10.

Causes of Alcoholism

The incidence of alcoholism is high among children from alcoholic homes. Since, however, the incidence is no higher than normal among children of alcoholic parents who are moved in infancy to non-alcoholic homes, it appears that this is an environmental rather than a hereditary effect. An alcoholic parent

not only sets the example of alcoholism, but tends to neglect children and to produce tensions in them.

In cases of marital discord connected with alcoholism, it is of some importance to know whether alcoholism or the discord is primary. Each may create or aggravate the other, setting up a vicious circle. There is, of course, no type of personality that cannot become alcoholic, as there is no type which is inevitably, under all circumstances, doomed to alcoholism.

Cost of Alcoholism

Benson Y. Landis calculates the economic cost of alcoholism to the United States in 1940 at a grand total of nearly \$779,000,000. This figure includes the cost of mental and physical diseases, accidents with injury and property damage, crime due to alcoholism, the maintenance of alcoholics in jails and prisons, and wage losses. Landis recommends setting up Yale-plan alcohol clinics wherever possible, with the suspension of sentences for drunkenness on condition that the alcoholics attend these clinics and carry out their treatment until they are discharged.

Donald S. Berry, director of the Traffic and Transportation Division of the National Safety Council, says that the average driver of a car with about 0.15 per cent of alcohol in his blood is fifty-five times more likely to be involved in a personal injury accident than a driver with no alcohol. One fifth of daylight accidents are associated with a drinking driver, one third of those during the hours of darkness.

Is Total Abstinence the Answer?

The consideration of total abstinence movements is a part of the study of the alcohol problem, for they aim at prophylaxis. The best exposition of the philosophy of these movements which I have seen is that of Mr. Harry S. Warner, who states that the exponents of total abstinence believe that the natural, healthy way of life is non-alcoholic.

"That alcoholic pleasure in restrained, moderate degrees is widely sought and socially approved is obvious, . . . but this social practice is regarded as unworkable . . . while large numbers continue moderate in their use of alcohol throughout life . . . the pleasure afforded those who do is not sufficient to offset the excesses of those who do not, and never will, maintain moderation . . .

"The attitudes of the community are vital, both as to cause and as to cure. The majority of all who

become intemperate, whatever their background, even the compulsive drinker, who is so because of inner emotional conditions, learned to count on alcohol in some social group, because of social approval, in their younger days. Social invitation and suggestion, the desire to conform to expectations, to be one of the group, especially not to be a 'wet blanket,' are the starting points of moderate and heavy drinking alike . . .

"The man of strength is no less strong for choosing not to add to the unhealthy pressures that burden the weaker . . ."

Treatment of Alcoholics

Brief jailing or long imprisonment may be necessary in certain cases of alcoholism to protect society, but it does not cure the alcoholic. After release from confinement for a few days or many years, the alcoholic usually gets drunk very promptly, according to Hon. William M. Maltbie, Chief Justice of the Supreme Court of Connecticut.

Medical treatment usually consists of either the conditioned reflex method or psychotherapy. The former is brief and less costly, but has to be repeated at intervals. The latter, when successful, is more lasting, but is unavoidably expensive in time and money. It is, of course, essential to distinguish between ordinary alcoholism and drinking that is symptomatic of a psychosis, a psychopathic personality, or a focal brain lesion or injury. It is useless to treat alcoholism in such people, unless the primary trouble can first be eradicated.

Although revival meetings have some remarkable cures to their credit, they are notoriously inefficient. The alcoholic who goes on an emotional debauch in every such meeting and "gets converted," only to get drunk the next day, is all too common. Very many alcoholics, of course, do not attend such meetings. Individual pastoral counseling may help or hurt, according to the training, insight, and understanding of the pastor. It is a fine thing that so many ministers are attending the Yale Summer School sessions. A year under a capable hospital chaplain is most valuable, for there the minister learns the basic nature of many psychosomatic conditions, including alcoholism.

In recent years, I have found that the most widely effective method of treatment is to refer the patient to an active local chapter of the Fellowship of Alcoholics Anonymous. However, to profit from their treatment, or from any other, the patient must recognize that he needs help and must want to get well.

In such a case, no amount of trouble is too great for the organization to take to help him, and he does not have to have money. I use it as the court of *first* resort, rather than of last, for my alcoholic patients *who want help and are willing to strive for life-long total abstinence*. The members have no "holier-than-thou" attitude, and they can penetrate all rationalizations and pretexts, because they have been through the same process and know all the complex tricks of the alcoholic. Probably the most important thing in their method of treatment as contrasted with other methods—psychologic, medicinal, or religious—is their insistence that their members promptly take an active part in helping other alcoholics. This is the finest type of occupational therapy that has ever been devised, and is, I believe, largely responsible for their notable success.

Discussion

Dr. Thomas G. Peacock (Southern Pines): Dr. Taylor has given us a very good paper, and I agree with him that Alcoholics Anonymous is doing honest, sincere work in helping these patients. In one point they go a little bit further than I have ever gone: Since I know that it is useless to ask an alcoholic to promise to stop drinking forever, I try to get him to say "I'm not going to take a drink until the Fourth of July," or Easter, or Christmas. Alcoholics Anonymous believes that "Sufficient unto the day is the evil thereof," and they ask their members to promise: "I'm not going to take a drink **today**." They are doing an excellent job and are accomplishing something.

I think perhaps dilantin or phenobarbital may be a helpful adjunct in the treatment of alcoholic patients—provided, of course, it is not given often enough to produce addiction.

Dr. Taylor: I follow very closely Dr. Strecker's viewpoint. Dr. Strecker will decline absolutely to accept any alcoholic who wants to be taught to drink like a gentleman. Dr. Strecker believes that that possibility for the real alcoholic personality is practically non-existent. Incidentally, Alcoholics Anonymous feels the same way.

In his book *Alcohol—One Man's Meat*—which, from the standpoint of treatment, is the most important book on the subject I know of—Dr. Strecker says that the place to treat alcoholism, medically, is in the doctor's office. The institution is a first-aid measure absolutely necessary to protect the alcoholic from himself and to protect society from him. But it is ridiculous to think we can persuade the alcoholic not to drink for the rest of his life while he's locked up where he can't drink.

Science and scientific methods which can provide useful and comforting things such as freedom from infection, good nutrition, alleviation of pain, and prolongation of life, cannot control fear, or shame, or grief; cannot establish purpose or dedication either for well or suffering human beings; cannot instill faith, hope, love, equanimity, or the other values that make life worth living.—David P. Barr: *The Responsibilities of the Internist*, Ann. Int. Med. 27:199 (Aug.) 1947.

LABORATORY SERVICES FOR THE PRIVATE PRACTITIONER

FRANK HOWARD RICHARDSON, M. D.,
F.A.C.P., F.A.A.P.

BLACK MOUNTAIN

What is the duty of the private practitioner with regard to having routine laboratory work done on his patients? It goes without saying that any good doctor will have all necessary laboratory tests made on any patient in whom he believes they are indicated. But what about the occasional patient with no obvious signs of trouble who has an early disease which would be detected in the course of a series of routine laboratory examinations? Any physician who is honest with himself can recall cases of early diabetes, beginning nephritis, helminthiasis, blood dyscrasia, or latent tuberculosis, which a urinalysis, stool examination, complete blood count, or tuberculin test would have brought to light. In such cases a routine laboratory procedure would save the physician's face and might save the patient's life.

It does not solve the problem to insist that every doctor should have his own compact little laboratory in which he can perform all the routine laboratory tests. The fact remains that not every practitioner can, or will, do this; and it is by no means certain that every man should attempt such a gigantic task. The "sink test" for urine is one of the miserable results of an insistence upon such a solution.

Two Methods of Providing Laboratory Services

I would like to suggest two possible solutions to this problem. The first is one that any man can adopt at once. The second—which is perhaps the ideal solution—requires a little more organization and initiative. Suppose we consider the simpler one first.

Arrangement between an individual practitioner and a technician or laboratory director

In order to put this plan into operation, the physician gets in touch with some laboratory technician who is already running a laboratory, or, preferably, with an internist who maintains his own laboratory but also does work for other doctors on a commercial basis. The latter arrangement is more satisfactory, since the internist stands respons-

ible for the character and dependability of all the work done by his technician, and he is likely to pick up points that might elude not only the technician, but the referring physician himself. He can also make available other procedures, such as basal metabolism tests, electrocardiograms, and the more unusual laboratory examinations beyond the scope of an ordinary technician. Frequently he can suggest helpful tests that would never occur either to a technician or to the referring physician.

The laboratory director or technician furnishes the referring physician a list giving the current price of each of the tests he is equipped to do—that is, the fee which the commercial laboratories and the hospitals charge the patient. Then, by consulting his records, he finds out what percentage of the bills sent out to his own patients is actually collected, and agrees to do all the work sent to him by the referring physician for a slightly higher percentage of the standard fees. It would be understood, of course, that the referring physician would pay on this basis for *all* the work he sent in, whether he actually collected from the patient or not.

How do the chief actors in the drama come out? The laboratory director increases the volume of his work, at a shade better than his usual percentage of collection. The referring doctor bills those of his patients who can afford to pay, at the prevailing rate. The difference between this fee and the reduced rate at which he pays the laboratory for the work more than accounts for the work done on charity patients, and for his failures to collect. Such at least seems to be the experience of those who try this plan. In addition, of course, his diagnostic accuracy is improved by having *all* his patients, and not merely a small selected group of them, given a full battery of tests. The advantages to the patient are, of course, obvious.

Division of the costs of a laboratory service among several participating doctors

The second plan proposed at the beginning of this discussion is a little more intricate at first glance; but it is so much more satisfactory that it is well worth exploring at some length.

In this case, an internist with his own laboratory or a commercial laboratory director offers to supply unlimited laboratory

service to all the physicians who join in the plan. He furnishes each participating doctor with a schedule of fees comparable to those current in his locality. At the end of the month he totals the expenses involved in furnishing laboratory services to the participating doctors, and prorates the cost among all the participants according to the amount of work they have sent in. Each doctor collects the standard laboratory fees from his own patients, and the difference between these fees and the actual cost which he pays the laboratory is sufficient to take care of charity patients and failures to collect.

Recently considerable criticism has been directed at some laboratories of this type for the exorbitant fees charged the patient, a large part of these fees being retained by the referring doctor. This practice has been considered analogous to the rebates given eye specialists by some optical companies. While the laboratory director should charge the participating doctors enough to allow himself a reasonable recompense for his own services, and while the referring doctor must charge his patients enough to cover his own liability for cases in which he cannot collect, neither should attempt to profiteer at the expense of the patient.

Conclusion

These two plans are offered rather as targets for others to shoot at than as complete and perfect solutions of the problem posed at the outset. If any readers of the JOURNAL have a solution of the problem that is more practical, won't they let the rest of us in on their secret?

Obstacles to the practice of psychosomatic medicine.—We who have received our training in the past have had our attention focused upon the recognition and treatment of organic and mechanical abnormalities. We have been obsessed with the fear of missing the presence of serious or potentially serious anatomical or chemical disease. Intellectually we have been occupied with the relationship of the clinical signs and anatomical deviations, with the correction of chemical defects and with the search and application of specifics. We have become burdened with a time-consuming and elaborate ritual to accomplish these purposes. While all of this is praiseworthy it is not enough if in the process we have lost the listening ear and our contacts with patients as people, or if we attempt to make diagnoses and decisions without consideration of personal problems, interpersonal relationships, and life situations in family, occupation and community.—David P. Barr: *The Responsibilities of the Internist*, Ann. Int. Med. 27:201 (Aug.) 1947.

Maternal Welfare Section*

CASE REPORTS FROM THE RECORDS OF THE MATERNAL WELFARE COMMITTEE

Inaccurate Death Certificates

The laws of our state require completion of a death certificate prior to burial or disposal of a body. The certificate must state the cause of death, and in cases of doubt an investigation must be made by the local coroner or health officer. The principal purpose of these regulations is to disclose any irregularity associated with the death, particularly in cases where homicide must be considered as a possible cause. The reason for these regulations is sound, and each of us must be in sympathy with them.

The State Board of Health is required to collect vital statistics on all deaths occurring in the state. The Division of Vital Statistics of the State Board of Health must make periodic reports of all deaths which occur, giving an analysis of the causes of death. This information is used freely in both lay and medical publications. The maternal and infant mortality rates are prominent in these reports, and are often used as an index to the quality of medical care available in any given area.

The maternal mortality survey has demonstrated an important problem in relation to death certificates. In the case of a death which occurs when the patient is unattended, the coroner often confers with an available physician and assigns a plausible cause for the patient's death, without ordering an autopsy or obtaining any direct evidence of the actual cause of death. An additional problem is the tendency of the attending physician to assign a definite cause of death in doubtful cases, in order to facilitate the disposal of the body for the family concerned.

Inaccurate death certificates have occurred with such frequency in the experience of the Maternal Welfare Committee that they color the reports of our Bureau of Vital Statistics.

*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

Frank R. Lock, M.D.,	J. S. Hunt, M.D.
Chairman	T. L. Lee, M.D.
J. Street Brewer, M.D.	Ivan Procter, M.D.
G. M. Cooper, M.D.	R. A. Ross, M.D.
E. W. Franklin, M.D.	R. A. White, M.D.

It is important for all physicians to make a concerted effort to correct this problem, since it affects the country's opinion of the quality of medical care in North Carolina.

Case 1—N. C. M. W. C. 300

A white married woman, 24 years of age, was attended during her pregnancy by an obstetrician. There was no history of any serious illness, and no abnormalities were recorded on any of thirteen prenatal examinations. Her blood pressure ranged from 110 systolic, 60 diastolic to 134 systolic, 86 diastolic. No albumin was found in the urine on any occasion. The Kahn test was negative. In the sixth month of her pregnancy, the patient had a mild convulsion at home, and was sent to the hospital immediately. The blood pressure was normal and urinalysis revealed no abnormality. A second short, mild convulsion occurred during the eighth month of pregnancy. All findings were again within normal limits.

A normal sixteen-hour labor was completed by low forceps delivery with episiotomy and repair. A normal living child was delivered. The patient's puerperium was entirely normal, and she left the hospital on the seventh postpartum day.

The patient was seen for a regular check-up six weeks after delivery. Her weight was 122 pounds and her blood pressure 130 systolic, 86 diastolic. A urinalysis revealed no abnormality. The pelvis was in excellent condition, with complete involution of the pelvic organs. Forty-eight hours later, the patient's husband found her lying on the bed with marked cyanosis. She was not breathing and was pronounced dead when an ambulance arrived.

An autopsy was performed by the coroner and disclosed only slight atherosclerosis of the aorta. For lack of positive information, the death was attributed to coronary thrombosis due to cardiovascular disease.

Discussion

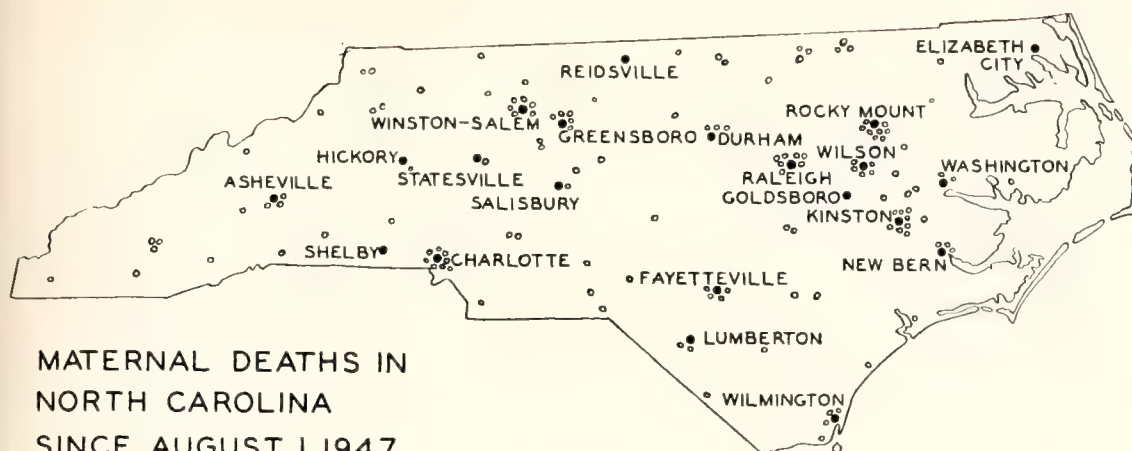
All deaths occurring during the early weeks of the puerperium are considered maternal deaths unless they are clearly unrelated to the patient's pregnancy. Although pregnancy and the two epileptiform seizures during the prenatal period probably had no direct relation to the patient's death, it is the opinion of the Committee that the cause of death should be filed as undetermined under these circumstances.

Case 2—N. C. M. W. C. 234

A married colored woman, 31 years of age, first consulted a physician in the seventh month of her third pregnancy. She was carefully examined, and her condition found to be normal. Her blood pressure was 120 systolic, 70 diastolic. Urinalysis showed no abnormalities, and the Kahn test was negative. She made two further visits for prenatal examinations, and the findings were normal on each occasion.

When labor began, the patient delayed in calling a physician. After sixteen hours, a physician was called and found the patient in active labor with a transverse presentation and the baby's arm protruding through the cervix. The cervix was fully dilated, and he referred her to a hospital for delivery.

A careful examination of the patient was made



**MATERNAL DEATHS IN
NORTH CAROLINA
SINCE AUGUST 1, 1947**

upon her admission to the hospital. Her general condition was excellent; the blood pressure was normal, and no edema was present. The fetal heart could not be heard, and maceration of the skin of the presenting arm indicated that the fetus was dead.

The patient was given an ether anesthetic by an experienced anesthetist, and the attendant delivered a stillborn baby by internal podalic version and extraction. The obstetric operation was completed without difficulty. No unusual external vaginal bleeding occurred, and no vaginal lacerations were observed. The third stage of labor was not complicated, and the placenta was expressed without difficulty.

The patient reacted from the anesthetic sufficiently to inquire if the baby was living. She then began to complain of severe pain in the left side of her chest; profound shock rapidly developed, and the patient died one hour after delivery in spite of the administration of intravenous plasma and stimulants. No autopsy was obtained. The attending physician listed the cause of death as pulmonary embolism, upon the basis of the clinical picture of rapid death associated with pain in the left side of the chest.

Discussion

With the advantage of hindsight, the Committee reviewed the record and considered the probable causes of the patient's death. It was recognized by the Committee that the lower segment of the uterus becomes extremely thin during normal labor. In the presence of an impacted labor of sixteen hours' duration, this segment is frequently less than 1 mm. in thickness, and spontaneous rupture of the uterus is often imminent. The prolapse of the arm would also tend to increase the usual thinning of the lower uterine segment.

Rupture of the uterus often occurs when internal podalic version is performed under these circumstances. Profuse bleeding into the abdominal cavity may be present with little or no external vaginal bleeding. Em-

bryotomy is a useful and accepted method of solving the problem presented by this case.

The Committee was of the opinion that the pain in the patient's chest probably resulted from blood in the peritoneal cavity and under the diaphragm. This analysis was presented to the physician who attended the patient as a more likely cause of her death than pulmonary embolism.

It is most gratifying to the Committee that they have since heard from this physician. He expressed appreciation of the Committee's analysis and stated that it had been helpful to him in a similar case which he had since observed.

Pulmonary embolism is a diagnosis commonly assigned in cases of sudden or unexpected death. Often it is given as the cause of death because evidence for a definite diagnosis is lacking. A careful review of the patient's final illness usually leads to several possible diagnoses and, at times, to constructive information for the management of a similar problem.

The family doctor as father confessor.—In the busy world of today the wear and tear of daily living is producing stresses and strains on many people who seek medical advice. The family physician is the father confessor of people with weary souls and troubled minds, who oftentimes are discouraged with the turn of events from day to day. The double role of the physician today as the family doctor and the father confessor places him in a unique position for social influence. Historically the father of medicine, Hippocrates, was the priest physician; whereas in modern times the dramatic events of the laboratory and the amphitheater draw attention to the material accomplishments, the greater field of medical service falls into the realm of the emotions and ambitions of those whom the doctor serves.—Edward L. Bortz: *Medical Statesmanship*, M. Ann. District of Columbia, 16:654 (Dec.) 1947.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

DURHAM

II

THE WORK OF THE EMPYEMA COMMISSION IN WORLD WAR I*

In the winter of 1917-18 the army camps in the United States were ravaged by a severe epidemic of hemolytic streptococcal infection of the lungs, which was accompanied by a high incidence of empyema. During the latter part of 1917 this streptococcal interstitial bronchopneumonia was causing about 65 per cent of all deaths in the army in the United States. In order that the disease might be studied more adequately, a special pneumonia commission was sent by the Surgeon General to Texas in February, 1918. In March, 1918, another special commission, known as the Empyema Commission, was sent to Camp Lee, Virginia, to discover what could be done to check the high mortality of this complication. The head of this latter commission was Lieut. Col. Edward K. Dunham, who in civil life had been a bacteriologist of prominence. Originally the Commission consisted only of him and myself. It was gradually enlarged until finally it consisted of twenty-two members, who studied the bacteriologic, surgical, and nutritional aspects of the problem.

In general the condition was characterized by a large pleural exudate which occurred early in the course of the pneumonia and consisted of serohemorrhagic, fibrinous fluid containing many streptococci and a small number of leukocytes and red cells. Such cases were wrongly diagnosed as empyema, because the medical officers failed to realize that a true empyema is a collection of pus which is easily recognized as such by the naked eye. The pleural effusion which occurred early in the course of the streptococcal pneumonia was not pus in the usual sense.

This difference in conception was not merely of academic interest, but was of very great practical importance. Most cases of

empyema which had been encountered by the same medical officers in civilian practice had been discovered after the subsidence of pneumonia. When an aspirating needle had been inserted into the pleural cavity, thick, creamy pus had been withdrawn. Open drainage, generally by rib resection, had been followed usually by prompt recovery. Those cases were due to infection by a pneumococcus. They were true examples of empyema (collections of pus). In other words, they were fully developed abscesses. The patients in the army epidemic, on the other hand, were found, early in the course of streptococcal bronchopneumonia, to have pleural fluid containing only microscopic pus. When the same principles of treatment were applied, approximately half the patients died.

It became evident to the members of the Empyema Commission that many of the deaths in those cases in which early open drainage had been instituted were due to asphyxia. Some of the patients were operated on at a time when they were suffering from severe air hunger. They were cyanotic and orthopneic. The additional burden to their respiration caused by creating an open pneumothorax from the open sucking drainage wound was often sufficient to cause death. Sometimes death occurred while the patient was still on the operating table, or an hour or so later.

When the plan of treatment was changed by postponing the drainage operation until after the pleural exudate had become a creamy pus, there was a dramatic reduction in mortality. At Camp Lee, for example, the mortality dropped suddenly from slightly more than 40 per cent to 4.3 per cent.

It seemed, therefore, that probably one of the most important factors in the previous high mortality was the induction of an open pneumothorax at a time when the patient could not withstand such an additional burden to his impaired respiration. During the period of waiting, which was generally about ten days or two weeks, the pneumonia usually subsided and the patient's general condition improved greatly. The drainage operation was performed in the post-pneumonic phase of the disease, and it was truly an abscess that was drained. The condition was therefore converted into one which was very similar to the well-known benign post-pneumonic pneumococcal empyema which

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was successfully treated by open drainage in civilian practice.

There were many who doubted the importance of the factor of open pneumothorax. The general impression at that time, because x-ray examinations of the chest were very crude, was that the effects of an open pneumothorax were confined to the side of the chest on which the opening was present. The mediastinum was regarded as constituting a rigid partition between the two halves of the thorax. If that conception were true, then indeed the creation of an open pneumothorax would affect only one lung. Because of the lack of precise information about the effects of an open pneumothorax, R. D. Bell and I were detached from the Commission and sent to the Johns Hopkins Medical School for two months to make an experimental study of the problem. It seemed probable also that such a study might have a bearing on the whole question of the performance of intrathoracic surgical operations. Chest surgery at the time was confined almost exclusively to the removal of some contained missiles within the lung.

The experimental study yielded much valuable information on the dynamics of respiration and on the effects of disturbing the intrathoracic pressure relationships. Limitations of space will not permit much discussion of our findings. Briefly, however, it can be stated that an open pneumothorax on one side was found to exert effects on both lungs, but not to the same degree. The normal mediastinal partition therefore is not an efficient barrier to the transference of pressure from one pleural cavity to the other.

The question of how large an opening in one side of the chest can be withstood is determined very largely by the vital capacity of the individual. A patient with a high vital capacity can compensate for a much larger opening than one with a low vital capacity. Indeed, if the vital capacity is scarcely larger than the tidal air requirement, the patient will die of asphyxia if only a tiny opening is made. On the other hand, a patient with a good vital capacity can withstand a bilateral open pneumothorax if the openings are not too large.

These observations not only did much to clarify the confused ideas about the effects of open pneumothorax, but they also provided a rational basis for postponing a drain-

age operation for empyema until the exudate becomes frank pus. When this occurs, a true abscess is present, walled off from the rest of the pleural cavity, and the vital capacity is higher because the pneumonic process has subsided. Thus any pressure disturbances which may occur will be minimal.

Three principles of treatment for acute empyema were recommended by the Empyema Commission, which eventually were internationally accepted. These were: (1) drainage, but with the careful avoidance of an open pneumothorax during the period of active pneumonia; (2) early sterilization and obliteration of the cavity; (3) maintenance of the patient's nutrition. Of the three principles, the first one was considered to be by far the most important.

These principles have lost some of their practical value in the last few years since the introduction of the new antibiotic drugs. Empyema, the once common complication of pneumonia, recognized since the time of Hippocrates 2300 years ago, has become nearly obsolete because of penicillin.

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The physical changes accompanying emotion.—The classical studies of Harold Wolff and his associates have shown that embarrassment or resentment may cause in the stomach a flushing, a hyperemia and at the same time an increase in secretion of acid; that when these emotions are continuous or often repeated, erosions of the mucosa may occur and that finally actual ulcerations may develop with symptoms indistinguishable from peptic ulcer. Of equal significance were their observations that in the same individual, fear and dread may be accompanied by abnormal pallor of the gastric mucosa with diminution or temporarily complete absence of gastric secretion and with loss of appetite and disgust for food. Similar changes have been seen in the nasal mucous membrane where resentment and embarrassment may produce hyperemia and excessive secretion while fear results in pallor and drying of secretions.

These observations must be regarded as only preliminary and there is little reason to suppose that the responses to emotion of other tissues and organs are less significant. Much evidence is already at hand to indicate that such diverse conditions as asthma, hypertension, thyrotoxicosis, ulcerative colitis and glaucoma have as a part of the symptom complex an emotional component which is significant both etiologically and symptomatically.—David P. Barr: *The Responsibilities of the Internist*, Ann. Int. Med. 27:198 (Aug.) 1947.

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NIGHT CALLS

In his "Secretary's Letter" for February 16, Dr. George Lull, secretary of the American Medical Association, tells an unpleasant truth when he says that

"Patients all over the country are voicing bitter criticism of the medical profession because of their inability to obtain the services of a physician at night. Scores of letters are being received at A.M.A. headquarters each week from patients who complain that doctors decline to make night calls. . .

"At the National Conference on Medical Service, held in Chicago, February 8, someone told the audience that a state legislator whose child was seriously ill called five doctors and got five turn downs.

"These complaints, piling up at an alarming rate, present a grave problem. Every doctor knows that a hasty turn down of a phone call at night creates ill feeling toward the medical profession as a whole."

Every physician who has been in practice for any length of time knows the nightmarish sensation of being jerked from a sound

slumber in the wee small hours by the ringing of the telephone bell. He knows the immediate impulse to refuse to leave his good warm bed. He should learn, however, not to obey this impulse without inquiring about the symptoms of the patient. If he is convinced that the call is necessary, he must force his tired muscles into activity.

The time has been when it was taken for granted that any doctor would answer every call he received, unless he was sure that it was unnecessary. Apparently this situation no longer prevails, if we may judge not only from Dr. Lull's letter but from other sources nearer home. Not long ago a young doctor just out of service came to a North Carolina city to do general practice. A number of older doctors were glad to refer to him calls that they could not make themselves, and his practice grew apace. Within six weeks after he had opened his offices, a medical veteran who had been giving him one to three referrals a day received a call about 2 a.m. from one of his old patients. After promising to send someone or to go himself, he called the young man, who came to the telephone, yawning audibly, and said, "O Doctor, I was out last night and am so tired that I wish you would get somebody else." The older doctor got up and made the call himself. Early next morning he phoned his secretary not to give the young man another call.

This doctor did not know that the family whose acquaintance he might have made was one of a closely-knit community of relatives, all most desirable patients. They would have been the nucleus of a good practice—but the young man was so exhausted by his first six weeks as a civilian doctor that he exchanged this golden opportunity for an hour's sleep.

Many doctors have added good families to their lists by making night calls; and, by the same token, many doctors have lost desirable families by refusing to make calls at inconvenient hours.

The artificial shortage of doctors brought about by the war will not last forever; and as competition becomes keener, patients will again be free to choose their doctors.

The medical profession still has a great reservoir of good will; but it is possible to lose much of the public's approval through real or apparent indifference to human suffering. The real doctor, in the words of

the late J. C. da Costa, "must learn thorough self-surrender and all his life must wear the iron yoke of duty." Consideration of the patient, as shown by willingness to make night calls when necessary, not only helps to build up the individual doctor's reputation, but is the best sort of public relations for the whole medical profession.

* * * *

ADEQUATE HOSPITAL SERVICES TO ALL THE PEOPLE

An unusually sane and logical discussion of the future course of hospital construction in this country is to be found in the memorandum of a conference between James F. O'Neil, national commander of the American Legion, and Graham L. Davis, president of the American Hospital Association.

The American Legion is advocating a federal hospital system of 300,000 beds for veterans unable to pay for hospital service and with service-connected disabilities. The American Hospital Association, like the American Medical Association, "is not in favor of federal governmental control of hospitals; nor does it believe in the principle of the care of the population in the governmental charity hospital." Furthermore, as Mr. Davis points out, "300,000 beds is far in excess of the needs of all veterans . . . What will happen 15 or 20 years from now, if not sooner, with the hospital construction program under Public Law 725 (the Hill-Burton Bill) and the veteran hospital construction program nearing completion, is that the nation will have 300,000 more beds than it needs." The resulting chaotic situation would be "just what the Communists want."

Mr. Davis reminded Mr. O'Neil that all the national health, labor, farm and business organizations supported the Hill-Burton Hospital Survey and Construction Act, the purpose of which is "to assist the several states . . . to inventory their existing hospitals . . . and to develop programs . . . for furnishing adequate hospital . . . services to all their people." This act has as one of its aims "to get doctors and nurses in the rural areas by providing them with adequate facilities." The veteran hospital program, on the other hand, provides for a few large hospitals to be located in medical centers, preferably near medical schools.

The decision to locate a large neuropsychiatric hospital at Salisbury—40 miles from the Bowman Gray School of Medicine of Wake Forest College—makes it seem doubtful that this policy will be strictly adhered to when it conflicts with political expediency. Whether the huge V.A. hospitals are located in large cities or in small towns, however, both the veterans and the population as a whole stand to lose more than they gain. If the hospitals are located in cities, they will be in competition with civilian hospitals, and will make it difficult for the latter to secure adequate personnel. If smaller communities are chosen for the oversized V.A. hospitals that are being planned, most of the veterans who seek hospital care will have to leave their families and travel long distances in order to get it. Furthermore, small communities do not afford the wealth of medical personnel that can be found in the large cities. The hospital care of veterans will be made unnecessarily expensive, both by the distances the patients will have to travel and by the greater financial inducements that must be offered the professional staffs of these hospitals.

Dr. Louis Bauer has pointed out that, while government hospitals have 78 per cent of the total bed capacity of our nation, they account for only 39 per cent of the admissions; non-government hospitals, with 22 per cent of the beds, care for 61 per cent of the patients. The following case history throws some light on the reason for this startling discrepancy:

A veteran came to a private practitioner for advice about a gastrointestinal condition. When told that an x-ray examination was necessary to determine the cause of his symptoms, he replied that he had been x-rayed at a veterans' hospital in this state. In reply to a request for a report on the findings obtained at this hospital, the medical officer in charge wrote that he had had part of the gastrointestinal tract x-rayed, but that the patient had left before the examinations had been completed. When the patient was asked why he had not stayed to have the rest of the x-rays made, he replied, "Why, doctor, I had been there a month, and got tired waiting." Since the work he had had done at the government hospital in a month could easily have been completed in two to three days, the physician could not

blame him for becoming disgusted.

The doctor later was told by one who should know that it was a frequent custom to keep patients in a V.A. hospital by dragging out their laboratory procedures. Since the hospitals receive their allotments of tax money on the basis of patient days, they are kept as full as possible during slack times by prolonging the stay of their patients.

Physicians who have talked with veterans about the treatment they have received in V.A. hospitals know that the experience related above is not an uncommon one. If the proposal to expand the federal hospital system to 300,000 beds is passed by Congress, the enormous waste represented by such incidents will be increased to alarming proportions. In the interest of the veterans who would receive this type of treatment, as well as of the taxpayers who would pay for it, every doctor should back the American Hospital Association in its support of the Hill-Burton act and its opposition to the hospital construction program proposed by the American Legion.

* * * *

ONE DOCTOR FOR 10,678 PATIENTS

It is gratifying to know that the physicians of Great Britain have voted by an overwhelming majority to retain their freedom instead of becoming paid government employees. In a plebiscite conducted by the British Medical Association, 86 per cent—24,340 to 4,084—voted against accepting the National Health Service Act (the British version of the Wagner-Murray-Dingell bill), and 85 per cent—24,066 to 4,495—said they would not enter the service if the majority voted against it. A little calculation shows that, with 4,495 physicians to care for about 47,000,000 people, each doctor would have to be responsible for nearly 11,000 patients.

Although the scheme is called "universal free medical service," few are naive enough to believe that any service furnished by the government is, in the final analysis, free. The people will have to pay for it in taxes—and it has been shown over and over that government agencies are notoriously extravagant and inefficient as compared with private concerns.

It is ridiculous, of course, to assume that anything approaching adequate medical care could be furnished by such a disproportionately small number of physicians.

There are only two alternatives apparent, however. One is to abolish the Act; the other is for the great majority of British citizens to pay twice for their medical care—once when they pay for the National Health Service Act in taxes, and again when they pay for treatment by private physicians who remain outside the provisions of the Act.

A letter from Dr. J. C. Watts in the *British Medical Journal* for February 14 recounts that, following the introduction of the National Health Service in Scotland in 1865, Joseph Lister was excluded from the government employment because "the Minister of Health had been fully informed . . . that the use of carbolic acid, since it prevented the formation of laudable pus, was inimical to the patient. . . The Minister of Health then rose to say that he was proposing to introduce regulations making the use of carbolic acid and similar substances, loosely described by Mr. Lister as 'antiseptics' (whatever that might mean), illegal."

Is it too far fetched to wonder what the result might be if Mr. Bevan developed a prejudice against penicillin or other antibiotics? In the United States, the mass immunization of our armed forces came within a hair's breadth of being forbidden because a high-ranking officer had a severe reaction to a dose of tetanus toxoid.

Another letter in the same issue, from D. W. Winnicott, calls attention to the "danger that a whole-time State medical service could be forced by Parliament to accept osteopathy, homeopathy, and other practices not accepted by the profession." That this danger is not confined to the other side of the Atlantic is shown by a release from the Veterans Administration, dated February 9, which quotes Dr. Paul B. Magnuson, chief medical director, as saying:

"Within the limits of practice of the healing art imposed by their respective state licenses, osteopathic physicians, when their services are requested by veterans, may be designated to provide outpatient treatment, on a fee basis, for service-connected disabilities under the same rules and regulations as govern such services by doctors of medicine."

Let us hope that British doctors may be successful in their goal-line stand against the forces of totalitarianism; and let us maintain a vigilant watch lest American medicine find itself in the same uncomfortable position.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF
WAKE FOREST COLLEGE

The patient was a 59-year-old white carpenter who entered the hospital on July 31, 1947. His chief complaints were high fever for three months, and weakness for two and a half months. About three months before entry he had a cold with a slight cough productive of a small amount of whitish, mucoid material. He also noted soreness in his "bronchial tubes." These symptoms continued, and about two weeks later he noted a gradual onset of fever. At first his temperature would rise only to 100 F., but later it rose as high as 102 to 104 F. daily. These elevations of temperature were often accompanied by a hard shaking chill with profuse sweating. The chills did not come on at any definite time of day. They would often occur every two or three days, but occasionally would not appear for several days.

Four weeks after the onset of his illness the patient entered another hospital for study. Blood cultures were negative, as were agglutination tests for typhoid, paratyphoid, brucella, and tularemia. Blood smears were negative for amebae, ova, and parasites. It was noted that the right leaf of the diaphragm was elevated and moved very little on respiration. A needle aspiration of the liver was performed, but no pus was found. During his hospital stay the patient began to have vague abdominal pain, with tenderness at McBurney's point. An appendectomy was performed, and a "low-grade peritonitis" was found. There was some brownish fluid in the peritoneal cavity.

The patient appeared to improve considerably after the operation, and his fever subsided. After he returned home, however, the temperature again rose to 105 F. He had been given unknown amounts of penicillin, sulfonamides, and streptomycin, as well as quinine and Diodoquin without benefit. His weakness gradually progressed, and he was referred to the North Carolina Baptist Hospital for further study.

The patient had had typhoid fever twenty years previously. He lived in a malaria-infested country, but had not had malaria. He had never had diarrhea. There was no history of contact with a tuberculous patient.

He used city water, but had an outhouse which was downhill from his home, and drained into a creek. The milk he drank was raw and came from his own cows, which had all been tested for Bang's disease.

Physical examination showed the temperature to be 102 F., the pulse 120, respirations 24, and blood pressure 100 systolic, 60 diastolic. On admission he weighed 143 pounds, but after one week in the hospital his weight was recorded at 131 pounds; his highest weight several years previously had been 165 pounds. The patient was a fairly well developed, poorly nourished male who appeared chronically ill. The skin was warm, moist, and pale; no petechiae were noted. The pupils reacted normally, and the fundi were normal. All teeth were missing. The tongue was slightly red and smooth about the edges. The trachea was deviated to the right, and there was slight emphysema of the chest. At the right lung base posteriorly the breath sounds were diminished, fremitus and whispered voice sounds slightly increased; dry rales were audible at the left base on inspiration. The heart was not enlarged to percussion; the heart sounds were distant, the rhythm regular; there was a soft systolic murmur over the precordium, loudest at the apex. The abdomen showed a well healed right rectus incision. Lateral to the incision there was an area approximately 10 cm. in diameter which was moderately tender. An indefinite mass which was smooth and non-tender extended 4 cm. below the right costal margin; it was thought that this was liver or perhaps muscle spasm. The spleen was not felt, and there was no abdominal fluid. The genitalia were normal. Rectal and neurologic examinations were not remarkable.

The urine was essentially normal. The blood count on admission showed 8.5 Gm. of hemoglobin, 2,820,000 red blood cells, and 8,000 white blood cells with 58 per cent polymorphonuclears, 25 per cent nonsegmented polymorphonuclears, 8 per cent small lymphocytes, 6 per cent monocytes, and 3 per cent unclassified cells. Platelets appeared adequate. Smears for malaria did not reveal parasites. Total serum proteins were 7.1 Gm. per 100 cc., with 3.6 Gm. of albumin and 3.5 Gm. of globulin. A Kahn test and stool examinations were negative. A bromsulphalein test showed 15 per cent retention in

thirty minutes. Agglutinations for typhoid, brucella, and tularemia were all negative, as was a heterophil agglutination test. A urine culture and nine blood cultures were negative. A complement fixation test for amebiasis was negative. A tuberculin test using old tuberculin in a 1:10,000 dilution was negative on August 3.

The electrocardiogram was normal. An x-ray of the chest showed the heart and lungs essentially normal; there was a band-like density in the left base, and the left pleura showed evidence of calcification in its lower portion. This finding probably represented an old pleuritis with calcification. A barium enema examination and x-rays of the esophagus and stomach were negative. The fact that the second and third portions of the duodenum were never visualized at fluoroscopy suggested the possibility of some pressure from the extrinsic mass in the right upper abdomen; the right diaphragm was elevated and moved only slightly. X-ray examination of the liver and spleen following injection of Thorotrast showed homogeneous concentration of the dye in these organs without evidence of filling defect.

During the first two weeks of the patient's hospital stay the temperature varied between 104 and 98 F., the pulse between 80 and 120, and the respirations between 20 and 40. Beginning August 7, he was given intramuscular injections of emetine hydrochloride, 32 mg. twice daily for ten days, because of the possibility of an amebic abscess of the liver. There was no response to this therapy.

On August 16 he was transferred from the medical to the surgical service for an exploratory laparotomy. After 800,000 units of penicillin were given daily for three days with no change in the temperature curve, an operation was performed on August 21. An incision was made over the twelfth rib; extraperitoneal exploration of the space surrounding the liver posterolaterally did not reveal any inflammatory reaction. In the upper lateral portion of the liver was found a rather hard nodule about 1.5 cm. in size. Further exploration revealed a hard white plaque on the peritoneal surface covering the kidney. The pathologic diagnosis on "frozen section" was chronic inflammatory tissue. Deeper digital exploration revealed many hard lymph nodes of various sizes in

the mesentery and retroperitoneal space. The gallbladder was identified and felt to be apparently normal. A specimen of the liver nodule was taken and sent to the laboratory for biopsy.

On August 25, 1947, streptomycin was started in doses of 3 Gm. daily. The temperature was 100 F. on August 27, and thereafter ranged between 98 and 99.4 F. daily.

The patient was transferred back to the medical service on September 1. Physical examination was essentially the same except that the patient felt well and did not appear chronically ill. On September 6, a skin test with purified protein derivative of tuberculin, first strength, was negative after forty-eight hours. On September 9, a test with the second strength purified protein derivative gave a 3-plus reaction in forty-eight hours. Another agglutination test for tularemia on September 5 was reported as being negative. The hippuric acid and galactose tolerance tests were within normal limits. The patient was continued on streptomycin, 3 Gm. daily, and his temperature ranged between 98 and 100.2 F. for the remainder of the hospital stay. When he was discharged on October 16, the patient felt well clinically and his weight was 145 pounds.

Discussion

DR. GEORGE T. HARRELL: In summary, this is the story of a severe febrile illness which involved the liver and responded to the therapeutic administration of streptomycin. The onset with symptoms suggesting an upper respiratory infection was followed by generalized symptoms and later by localization of the disease in the abdomen. Such a sequence of events could follow the dissemination of an infectious agent through the lymphatics or through the blood stream.

Typhoid fever is an example of a disease which enters through the lymphatics. Following ingestion, typhoid bacilli are phagocytized by the large mononuclear cells in Peyer's patches, whence they are carried through the intestinal mucosa into the lymphatics. As the organisms break out of the regional abdominal lymph nodes into the thoracic duct, they are carried by lymph into the subclavian vein and thence by the blood to the lungs, where they meet a large filter bed. The lodgment of small clumps of bacteria in

the lung capillaries may give symptoms suggesting an upper respiratory infection, and many cases of typhoid are diagnosed as bronchitis in the first few days. The infection then is widely disseminated by the blood stream, secondary localization occurring in the liver and biliary passages. In this case the gradual onset of fever, with steady progression to high temperature, chills, and sweating, is consistent with typhoid fever, but the subsequent course is not.

An organism which reached the body through the bowel, passing the intestinal mucosal barrier, but spreading directly through the blood stream without first invading the lymphatics, would enter the portal circulation and be filtered out in the liver. Amebae invade the body in this fashion. If such was the mode of spread in the present case, the symptoms of an upper respiratory infection must have been due to an intercurrent disease of no great significance.

Multiple *anatomic* structures were involved. The organ first proved to be affected was the appendix; a report of the pathologic findings in this organ might prove extremely informative. It is known that the peritoneum was involved, since a low-grade peritonitis was observed during the appendectomy; a peritoneal plaque presumed to be fibrotic was noted at the second exploration. The abdominal lymph nodes were seen to be enlarged; the results of a pathologic examination of a node would shed considerable light on the mode of spread of the infection. The liver was involved, as was proved at operation. The diaphragmatic portion of the right lobe of the liver, where the nodule was found, is the spot where amebic abscesses locate most frequently; aspiration before the first operation did not reveal an abscess, however. Since jaundice was not a clinical manifestation of the disease, the periportal or biliary radicals were not affected; had the central areas of the liver lobule been involved, ascites would have been a prominent finding. The x-rays suggest involvement of the lung, though the presence of calcification indicates that the lesion was of long standing and possibly inactive. The anatomic distribution of the lesions gives the impression of a widespread disease process with an apparent predilection for lymphatic tissue.

No definite *etiologic* agent was clearly demonstrated. To judge from the pathologic

description of the peritoneal plaque, the patient had a chronic granuloma; this type of tissue response may be caused by many agents of disease.

One approach to an etiologic diagnosis is an analysis of the possible sources of infection. The patient's occupation (carpenter) would not predispose him to any particular type of infection. No history of direct contact with an animal reservoir—such as rats or rabbits—or with another infected individual is given. He is known to have been exposed to malaria in the past, but the clinical course of the disease is not that of malaria. Since his home was connected with a city water supply, which is presumed to be safe, the infection must not have been water-borne. Though he did not have the most modern facilities for sewage disposal, the fact that the privy was downhill from the house would make unlikely direct contamination of food or water with sewage. The most likely source of the infecting agent would be milk. The patient kept his own cows, and the milk was not pasteurized before it was used.

Laboratory data are helpful in arriving at an etiologic diagnosis, if the findings are positive; negative findings should not be accorded the same weight. Unfortunately most of the diagnostic studies were negative. The blood cultures should have disclosed a blood-stream infection with the most common gram-positive or gram-negative bacteria. The clinical course is rather long and severe for the typhoid type of brucellosis, but tularemia of the typhoid type might produce exactly this clinical picture. *Brucella* might have been recovered if the cultures on ordinary media were kept for several weeks or if special media were used. The tularensis organism would not be recovered from blood cultures unless a special medium containing cystine were used. The *brucella* or tularensis agglutinations might have become positive during convalescence.

Tuberculosis is a disease which has a particular affinity for lymphoid tissue. The x-ray finding of an old pleuritis with calcification is compatible with an initial tuberculous lesion. Though the calcification would suggest that the lesion was well walled off, a reinfection type of tuberculosis could have followed a spread from this initial focus even though it had been dormant for years. A

reinfection may have occurred from the outside, following ingestion of contaminated milk. The negative tuberculin test early in the course of the illness is compatible with an infection of sufficient severity to overwhelm the immune processes; the development of a positive test after antibiotic therapy and during convalescence would make tuberculosis a distinct possibility.

The fact that the white blood cell count was always low would also tend to favor a tuberculous etiology; the shift to the left in the Schilling hemogram and the small number of small lymphocytes would be compatible with a tuberculous infection.

A fungus disease such as histoplasmosis might be considered, but the spleen was not sufficiently enlarged nor the white count low enough. A larger parasite, *Endamoeba histolytica*, may penetrate the bowel, frequently at the appendix, and spread to the liver through the portal circulation; the complement-fixation test was negative, however. The use of Thorotrast as a contrast medium in the diagnostic x-ray studies did not reveal a metastatic malignant process nor a diffuse failure of concentration as might occur in Hodgkin's disease, a granulomatus process of uncertain etiology.

An attempt may be made to arrive at an etiologic diagnosis by a trial on chemotherapy. This method of analysis presupposes that chemotherapeutic drugs are specific for restricted groups of infectious agents. This principle is not entirely true, but the therapeutic spectrum of a given drug is reasonably well known. Other variables—such as the dosage of the drug, the route of administration, and the duration and location of the pathologic process—all affect the therapeutic result.

The patient's failure to respond to quinine is reasonably good evidence that malaria was not the cause of the fever. Since quinine has an antipyretic effect and is a general protoplasmic poison, which affects other infectious agents as well as plasmodia, a good therapeutic response must be interpreted with caution. Diodoquin given by mouth gives good results in amebic dysentery or amebiasis confined to the colon; it is not absorbed sufficiently to have a good therapeutic effect on amebic hepatitis. Emetine given parenterally is the drug of choice in amebic

hepatitis or early abscess of the liver; the failure of an adequate course of this drug would make amebic infection of the liver less likely. Emetine, too, may have a non-specific temporary antipyretic effect.

This patient, before admission to this hospital, had had a course of sulfonamide therapy which, if adequate, should have controlled an infection with the usual gram-positive cocci or with some gram-negative cocci and bacilli. An unknown amount of penicillin was given before admission, and an adequate amount was administered preoperatively in this hospital, though for only three days. The failure of both courses of penicillin to alter the temperature or course of the disease would tend to rule out infection with sulfonamide-resistant gram-positive cocci, the gram-negative cocci, and the spirochetes. The course of therapy was too short to produce improvement of a tertiary syphilitic lesion, and it must be remembered that the blood serologic test may be negative at that stage of the disease.

Within three days after the administration of large doses of streptomycin was begun, the temperature fell to normal. It is true that streptomycin administered before admission was ineffective, but the daily dose and duration of therapy are not given. Such a prompt response to streptomycin would be expected in cases of infection due to most of the common gram-negative bacilli, but if any of these organisms were present, they should have been grown from the blood or liver with no difficulty. Tularemia responds rapidly to even small doses of streptomycin given for a short period of time; the clinical course and the location of the lesions are compatible with the typhoid type of tularemia, but the agglutination test, which should be positive after recovery, was negative. Brucellosis, histoplasmosis, and Hodgkin's disease have not been shown to respond to the administration of streptomycin.

Ordinarily, one would not expect streptomycin to exert a beneficial effect before the second week in a tuberculous infection. It is conceivable, however, that the initial course of the drug was sufficient to inhibit multiplication of bacilli without eradicating them. Sufficient inhibition may have been achieved to permit the large doses of streptomycin to be effective in a much shorter period of time than would otherwise be anticipated. The

fact that the tuberculin test became positive after therapy would lend additional support to the impression of a tuberculous etiology.

Recovery from tuberculosis of the liver is a relatively rare occurrence. Tubercles are frequently found in the liver in the course of miliary spread of the disease. Miliary tuberculosis was uniformly fatal before the advent of streptomycin; the effectiveness of the antibiotic in this type of infection is still under investigation⁽¹⁾. In rare cases large, solitary tubercles have been reported as the cause of recurring fever with enlargement of the liver⁽²⁾. Large tuberculomas should have been outlined by the Thorotrast, and one would not expect them to respond so promptly to chemotherapy⁽³⁾. The absence of jaundice would tend to rule out retrograde infection along the small branches of the biliary tree—the so-called tubular tuberculosis of the liver⁽⁴⁾. The fact that laboratory studies showed no diminution in liver function would suggest that the lesions were small; the response to streptomycin would indicate that they were not fibrotic and that the antibiotic had readily penetrated into the tubercles.

Dr. Harrell's Diagnoses

1. Healed tuberculous pneumonitis and pleuritis.
2. Tuberculosis of the appendix with healed focal tuberculous peritonitis.
3. Tuberculous abdominal lymphadenitis.
4. Tuberculosis of the liver—multiple small fibrocaseous lesions in the midzonal area of the lobules.

Anatomic Discussion

DR. EARL R. BALDWIN, JR.: The tissue submitted for examination consisted of a small, grayish-white mass. Several nodular elevations 2 mm. in diameter were noted in cut sections. Microscopic examination showed a granulomatous reaction which practically destroyed the architecture of the liver. There were numerous areas of necrosis, each surrounded by a zone of round cells, Lang-

hans' giant cells, and epithelioid cells. Beyond this zone there was active fibrous-tissue proliferation.

The pathologic picture is that seen in many of the infectious granulomas, and although it is impossible to make an etiologic diagnosis on the basis of the histologic picture alone, the response seen here is strongly suggestive of tuberculosis. No tubercle bacilli were demonstrated by doing acid-fast stains on serial sections of the tissue submitted.

Anatomic Diagnosis

Chronic granulomatous hepatitis, suggestive of tuberculosis

Follow-Up Note

The patient was transferred to the Western North Carolina Sanatorium on October 18, 1947. Streptomycin was continued, though the dose was reduced to 0.5 Gm. twice daily on October 28. On November 25 the drug was discontinued three months after therapy was started. He was discharged December 18 on limited activity.

About February 1, 1948, he noted afternoon fever and the onset of cough productive of a half cup of whitish sputum which was occasionally blood-flecked. By the time of his return visit to the North Carolina Baptist Hospital on February 16, he had lost 10 pounds in weight. An x-ray of the chest revealed old fibroid changes in the left lower lung field, but no evidence of tuberculosis. Acid-fast organisms of atypical shape were found in the sputum.

The diagnosis of tuberculosis seems even more likely in view of the latest findings. Drug-fast strains of organisms, which often are morphologically atypical, may develop in the course of chemotherapy.

The toxicity of streptomycin now appears to be sufficiently great to deny use of the drug to those patients who are making satisfactory progress under conventional forms of treatment. At present, most experienced physicians prefer to reserve the limited supply for patients more acutely ill, and especially for those in whom the disease has been progressive during recent months, and no other treatment is likely to be effective. Streptomycin is of no lasting or significant benefit to patients who apparently have hopeless, destructive types of pulmonary tuberculosis.—H. McLeod Riggins, M.D. and H. Corwin Hinshaw, M.D., *Am. Rev. Tbc.*, Aug., 1947.

It is wise to assume that all subjects who show a positive tuberculin test before the age of three years have active infection. In such children, the infection has hardly had time to become inactive.—Joseph D. Wassersug, M.D., *N.E. Jour. Med.*, July 3, 1947.

1. (a) Wolf, G. A., Jr., and Flory, C. M.: Miliary Tuberculosis of the Liver, *Am. Rev. Tuberc.* 51:553-560 (June) 1945; (b) Randolph, B. M.: Acute Miliary Tuberculosis of the Liver, *Am. Rev. Tuberc.* 22:593-597 (Dec.) 1930.
2. Herrell, W. E. and Simpson, W. C.: Recurrent Hyperpyrexia Due to Solitary Tuberculoma of the Liver, *J.A.M.A.* 111:517-519 (Aug. 6) 1938.
3. Ashton, N.: A Case of Multiple Tuberculomata of the Liver, *J. Path. & Bact.* 58:95-97 (Jan.) 1946.
4. Rosenkranz, K. and Howard, L. D.: Tubular Tuberculosis of the Liver, *Arch. Path.* 22:743-754 (Dec.) 1936.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

INSURANCE: *A misrepresentation in an application for a policy will not make the policy void unless it is made with intent to deceive or unless it materially affects the acceptance of the risk by the insurer and contributes to the event on which the policy becomes payable.*

This is a case in which the father of a minor child secured for her benefit a policy covering hospital insurance. In answering the usual questions he failed to inform the company that the child had for some time suffered from hernia. Subsequent to the issuance of the policy the child had an attack of appendicitis and was taken to a hospital, where an operation was performed for this condition. During the operation the surgeon discovered the hernia and repaired it. He made no additional charge for this service. Because the insurance company failed to conform to its contractual obligations, this suit was instituted by the father and the child who was the beneficiary.

The insurance company alleged in its defense that the failure of the plaintiff to reveal the presence of the hernia was a deliberate attempt to deceive, and that this act on his part rendered the policy void because of fraud.

The issues submitted to the jury in superior court established the following facts: (1) that the policy was in force at the time of the operation; (2) that, though it was incorrectly stated in the application that the *feme* plaintiff did not have hernia, the statement was not made with intent to deceive; (3) that the hernia did not contribute to her hospitalization and did not materially affect acceptance of the risk by the defendant insurance company; and (4) that under the terms of the policy the plaintiffs were entitled to recover \$145.00, the sum alleged to be due on the insurance contract.

From this judgment the defendant appealed to the Supreme Court.

The Supreme Court felt, and so stated, that the false answer was not made with intent to deceive, did not materially affect the acceptance of the risk, and did not con-

tribute to the contingency or event on which the policy became due and payable. The child was sent to the hospital and operated upon primarily because of appendicitis. The hernia operation was in a sense purely incidental, and rendered the non-disclosure complained of by the insurance company immaterial. The judgment of the court below was affirmed.

(North Carolina Supreme Court, spring term, 1947. Vol. 227, p. 456.)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

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No. 3

THE DIAGNOSIS of active pulmonary tuberculosis rests on three pillars—symptoms, roentgenology, and the finding of the tubercle bacillus. Of this triad the first two are not specific for the disease; X-ray shadows can only suggest the diagnosis, and symptoms may be vague or appear late in the disease. Physical signs and tuberculin tests have definite but limited diagnostic significance. The demonstration of tubercle bacilli, however, establishes the diagnosis beyond dispute. In this disease, therefore, the laboratory can render a unique service to the physician. It may be more fully utilized if the possibilities and limitations of bacteriological methods are understood.

THE BACTERIOLOGICAL DIAGNOSIS OF PULMONARY TUBERCULOSIS

Diagnostic significance of bacteriologic findings. The culturing of sputum and/or gastric contents is of paramount importance if a complete diagnostic picture is desired. If frequent and technically expert studies are made both positive and negative results have a diagnostic importance equalled by few laboratory procedures in any disease. Under the conditions just stated, the diagnostic significance of bacteriologic findings may be described as follows:

(1) Tubercle bacilli are demonstrable in practically 100 per cent of patients with frankly active pulmonary tuberculosis. Exceptions to this dictum are: In a considerable percentage of patients with hematogenous disseminations and without cavities, tubercle bacilli cannot be demonstrated for long periods of time. In about 20 to 30 per cent of patients with minimal, asymptomatic tuberculosis, tubercle bacilli cannot be demonstrated with the methods at present available.

(2) Failure to find tubercle bacilli on frequent subsequent examinations in patients who previously had positive findings, strongly suggests that the process has become arrested.

(3) Failure to find tubercle bacilli on at least ten specimens, if all available methods have been used, practically excludes the diagnosis of active pulmonary tuberculosis with the exceptions noted above.

(4) Demonstration of tubercle bacilli in sputum or gastric contents proves, for all practical purposes, the existence of active pulmonary tuberculosis. In rare cases, however, tuberculous lesions occur in the upper respiratory tract (including trachea and large

bronchi) which may shed bacilli in the absence of demonstrable pulmonary tuberculosis. Nonpathogenic acid-fast bacilli, which resemble but are not tubercle bacilli, have occasionally been observed and cultured from human secretions. In case of doubt, acid-fast bacilli must be identified by animal inoculation.

The diagnostic significance of negative bacteriologic findings depends on the clinical and roentgenological picture: In patients with moderate or large amounts of purulent sputum, with obviously active pulmonary lesions, even three or four negative smears and concentrates are a strong argument against the diagnosis of pulmonary tuberculosis. On the other hand, in patients with minimal or no sputum and in whom the pulmonary lesions are small, without cavitation and of questionable activity, negative bacteriologic findings assume diagnostic importance only after many cultures have remained negative.

Prognostic significance of bacteriologic findings. Disappearance of tubercle bacilli from previously bacilliferous secretions suggests that the process has become arrested. Absence of tubercle bacilli, at least in smears and concentrates, is one of the requirements in the National Tuberculosis Association's Diagnostic Standards for classifying a patient as "apparently arrested" or "arrested."

Fluctuations in the number of tubercle bacilli in sputum and gastric contents are frequent and have little prognostic significance. Grading of sputum records by the Gaffky scale should be discouraged. For clinical purposes it is sufficient to grade reports according to gross distinctions, such as "many bacilli," "few bacilli" and "very rare" on direct smear; "bacilli present only in concentrates"; "sputum or gastric positive on culture."

Methods for reasonably accurate estimation of the number of bacilli have been worked out but they are too complicated for routine use.

An irksome problem is the patient who, after adequate treatment, fulfills the requirements for the classification "arrested," but from whose sputum or gastric contents an occasional positive culture is obtained. Many such patients live normal lives without breakdown. There is, however, some evidence that such patients reactivate their disease more frequently than those in whom all cultures are negative.

Evaluation of bacteriologic methods. Under the assumption that competent laboratory work is done, one may expect that cultures of sputum and gastric contents may together contribute between 30 and 40 per cent of the total positive findings. Between 60 and 70 per cent of the new admissions, upon whom a positive diagnosis will be established by the examination of smears and concentrates, will be so diagnosed by one of the first three examinations.

These figures indicate general trends; they are, of course, largely dependent on the type of patients under consideration.

Even with the best available methods it is not possible to demonstrate tubercle bacilli in all patients with active tuberculosis. This is due to technical deficiencies and because some patients expel bacilli only at irregular intervals.

Collection of Specimens. Sputum: Sputum is collected in sterile wide-mouthed bottles with sterilizable screw-tops. At least 15 cc. should be collected, even if it takes several days to do so. Patients must, of course, be instructed to collect only sputum—that is, secretions coming up from below the larynx, and not saliva or postnasal discharge.

Gastric contents: Fasting gastric contents must be examined in all patients who have no sputum and those in which sputum examinations have been neg-

ative. Such specimens must be sent to the laboratory immediately after withdrawal and must be promptly prepared for culture, since prolonged contact with gastric juice seems to impair the viability of tubercle bacilli.

The Bacteriological Diagnosis of Pulmonary Tuberculosis, Max Pinner, M.D., Veterans Administration Technical Bulletin, October 10, 1946. (Original paper includes laboratory directions and bibliography.)

PUBLIC RELATIONS

PUBLIC RELATIONS AND THE INDIVIDUAL DOCTOR

The time was when the medical profession did not need to concern itself about its relations with the public. The position of the doctor as a leader in the community was unquestioned, and his word on medical matters was accepted as final. Within the past decade or so, there has been a subtle change. The public has become better—or worse—informed about health matters. *The Reader's Digest*, *Time*, *The Saturday Evening Post*, and other popular magazines have found that the layman laps up quasi-scientific articles on medicine as a cat laps cream. More dangerous is the potent and insidious propaganda fed the public by Isadore Falk, the brains of the Federal Security Agency, and his cohorts, who are busily engaged in smearing the medical profession in an attempt to bring about political control of medical practice. The millions of dollars spent by federal bureaucrats and the personal efforts of 45,000 federal employees to destroy the confidence of the people in the present system of medical practice⁽¹⁾ are bound to have some influence.

Part of the blame for the public's more critical attitude toward the medical profession, however, falls on the doctor themselves. Too many physicians have taken advantage of the shortage of medical personnel created by the war. A complaint heard everywhere these days is that it is almost impossible to get a doctor to make night calls⁽²⁾. The long overdue exposure of the practice of accepting rebates from optical houses and commer-

*Prepared for the Public Relations Committee of the Medical Society of the State of North Carolina:

Donald B. Koonce, M.D.,

Chairman

J. Stuart Gaul, M.D.

John S. Rhodes, M.D.

Amos N. Johnson, M.D.

H. H. Briggs, M.D.

1. "The Unauthorized and Illegal Expenditure of Public Moneys," Editorial, North Carolina M.J. 8:450 (August) 1947

2. See Editorial, "Night Calls," in this issue.

cial laboratories has not won any friends for the medical profession.

Whatever the reasons for the changed attitude of the public toward their physicians, it is obvious that something must be done to convince people that the doctors are their friends; that, while the medical standards in this country are the best in the world, organized medicine is constantly striving to raise them still higher; and that political control of medicine would inevitably mean inferior medical care.

The American Medical Association is making a serious effort to improve the public relations of the medical profession from the national standpoint. Our State Society had one of the first Public Relations Committees in the country, and now, under the able leadership of Dr. Donald Koonce, this committee is more active than it has been in years. Public relations at the national and state levels are important; but no public relations program, regardless of how vast and costly it may be, can succeed without the cooperation of the county medical societies and the individual doctors who compose them.

Every county society in the state should have its own public relations committee. One of the first things the chairman of such a committee should do is to seek a conference with representatives of the local paper or papers. He should give them the names of his committee members, and tell them that any one of these doctors will be glad to supply information about any medical matters that may arise. This committee may also assume the task of furnishing speakers for medical talks whenever they are needed. It is not too much to ask that every candidate for public office who lives in the committee's sphere of influence be interviewed by a member of the committee, by his family doctor, or by any physician who knows him well.

Even after the official public relations committees of the national, state, and county medical societies have put forth their best efforts, the layman's opinion of the medical profession finally boils down to his opinion of the individual doctors with whom he comes in contact. "Good public relations depends upon good works—not so much on how widely we are known, but on how favorably we are known. . . . Our public relations cannot be successfully promoted by any one individual. . . or by any group

hired to develop this program. This undertaking is a project in which each must do his part . . . working as a team . . . to inform the people of our desire to be of service to them."⁽³⁾

At the annual meeting of the Medical Society of Pennsylvania in Pittsburgh last September, one of the best exhibits presented was that of the Committee on Public Relations. Members in attendance were invited by one sign after another to meet the best public relations man the medical profession has. These signs finally led to a booth containing a full-length mirror. What the Pennsylvania Medical Society was trying to get across to its members is equally applicable to the members of the Medical Society of the State of North Carolina: "*Every time you look at yourself in the mirror, you see the man who can do the best public relations job for you . . . and your profession.*"⁽³⁾

WINGATE M. JOHNSON, M.D.
Winston-Salem.

3. From a pamphlet, "No Idle Challenge," put out by the Coordinating Committee on Public Relations of the Medical Society of the State of Pennsylvania.

CORRESPONDENCE

To the Editor:

I have read with interest and approval the editorial, "Preventive Medicine and Voluntary Health Insurance," in your January issue. The adoption of the suggestions in this editorial would indeed extend the coverage of voluntary health insurance into a more nearly adequate program to combat socialized medicine.

The section dealing with the payment of professional fees for surgical care only is of particular significance. The obvious conclusion is that the insurance companies have decided that hospitalization for an operation is of more importance than hospitalization for a medical condition. Payments for medical professional fees during a period of hospitalization should be covered as are surgical professional fees at present.

There is one point of particular importance not mentioned in this editorial. As the editorial points out, insurance is bought to cover the cost of unpredictable financial catastrophe. Hospital insurance coverage

has lagged far behind rising hospital costs. I refer not only to actual increases in room rates and hospital procedures due to increased cost of operation, but to the expensive new therapeutic agents, such as streptomycin and penicillin, which medical science has made available in the last few years.

Hospital insurance is of little help in a long and serious illness which requires hospitalization. The greatest percentage of total coverage is on the short stay of a few days to two weeks where few "hospital extras" are required. The patient who needs the maximum help is the one who is forced to be away from work for a long period of hospitalization and convalescence. I believe that a study would reveal that a very small percentage of total hospitalizations are for illnesses of particular severity or of long duration. I am referring primarily to such conditions as a brain or lung tumor, or Rocky Mountain spotted fever. Hospital insurance could protect the patient against illnesses of this sort by paying for more of the expensive extras (other than room and board) which cause the bills to rise to such enormous proportions. If necessary, some form of exclusion on minor conditions (such as making the patient pay for the first two days) could be inserted into the policy to help pay the cost of this. I doubt that the cost of covering these severe illnesses would be enough to necessitate this measure, however.

Obviously the insurance company needs protection against unjustified charges or extended unnecessary stays, and a fairly complete report would have to be filed with the insurance company on each such admission.

These thoughts are offered only as additional suggestions for improving our insurance protection. We can all agree that the Blue Cross Plans have done an amazing job of growth and coverage in the last few years. The job is not yet completed and there must be constant improvements in the coverage offered.

Yours very truly,

C. T. HARDY, JR.

Business Manager, Private
Diagnostic Clinic, Bowman
Gray School of Medicine of
Wake Forest College

BULLETIN BOARD

STATE BOARD OF MEDICAL EXAMINERS

The North Carolina Board of Medical Examiners will hold a meeting for the purpose of licensure by endorsement of credentials on May 4 at the Carolina Hotel, Pinehurst, at 10 a.m.

The board will hold its annual written examination for the purpose of licensure at the Sir Walter Hotel, Raleigh, June 21-24. Applicants for licensure by endorsement of credentials will be interviewed on June 22, the board to convene at 10 a.m.

NORTH CAROLINA ACADEMY OF GENERAL PRACTICE

The North Carolina branch of the American Academy of General Practice was organized in Greensboro on February 22, with ninety doctors present. Dr. John R. Bender of Winston-Salem was elected chairman, Dr. W. A. Sams of Marshall vice chairman, and Dr. Roscoe McMillan of Red Springs secretary and treasurer.

THE NORTH CAROLINA LEAGUE FOR CRIPPLED CHILDREN

For the thirteenth year, the North Carolina League for Crippled Children invites its friends to share in financing its work during the Annual Easter Seal Campaign, February 28 through Easter, March 28. During the past year the generous contributions of the public made it possible to expand considerably the program of the League.

Among the services rendered by the League during the past year were:

1. **Medical Care:** Specialized care to insure the best possible physical correction included orthopedic operations, orthodonture treatments, blood transfusions, clinical treatments, hospitalization, convalescent home care, and physician's visits to homes.
2. **Artificial Aids:** Artificial limbs, extension shoes, crutches, wheel chairs, glasses, hearing aids, and a plastic ear were provided.
3. **Transportation:** To clinics, hospitals, and schools.
4. **Education:** a) Special training classes at the University of North Carolina for teachers interested in working with handicapped pupils.
b) Summer Educational Center for handicapped children.
c) A speech correction program in one city school.
d) An orthopedic class in two city schools.
e) Bedside teaching in hospitals and private homes.
f) Boarding school for pupils who cannot get to and from public school.
g) Speech therapy and remedial reading for children in two counties.
h) Educational publicity through conferences and bulletins to inform the public of the needs of crippled children.
5. **Research:** The League staff made a nationwide study of laws pertaining to the education of handicapped children. Following this study, a bill was drafted and introduced to the 1947 General Assembly. The General Assembly approved the bill, so now the type of education

needed by the handicapped children in North Carolina through the public schools will be made available to them, as soon as teachers can be trained in specialized methods needed for conducting such classes.

6. **Other Services:** Referral to proper agencies of requests for services not available from the League. Interpretation to parents of children's condition and needs when the physician was unable to talk with parents. Supplemented services of other agencies for needs not included in scope of their program.

The League is a private social agency that co-operates with, but does not duplicate the work of, other public and private charitable organizations. It aids the crippled whether the condition resulted from accident, disease, infection or birth. Its only requirement for aid—a valid need not otherwise provided for. Its main source of funds—voluntary contributions during the annual Easter Seal Campaigns.

The consistent growth of the League during the past years reflects both the fundamental need for such an agency, and the increase of public confidence in its program. Your contribution at this time will improve the lot of one or more crippled children. For whatever your heart prompts you to give, the children say "thank you and Happy Easter."

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

The Department of Public Health Nursing, School of Public Health, announces that a new course called "Special Fields in Public Health Nursing," has been added to the requirements for candidates for the certificate and also for the degrees.

The ever increasing demands made on public health nurses indicate that, in order to keep abreast with the expanding services, knowledge of these special fields is essential. A nationally known authority, a specialist in his field, will be in charge of each subject presented. The course carries 5 quarter hours of credit and is designed for consideration of the functions and responsibilities of public health nurses in the various phases of public health not already included in "Maternal and Child Health Services." It covers particular fields of public health nursing which require adaptation in organization and administration. These fields include mental hygiene, cancer control, geriatrics, tuberculosis nursing, and orthopedic nursing.

Advantages:

The advantages of this course are threefold. It offers to the regularly enrolled students or nurses an opportunity for instruction in a variety of timely subjects. Those who wish to enroll for one quarter of work during the summer may receive instruction in the five subjects offered during a short period of time. To those who cannot be released from the ever-pressing work of an agency for a five weeks period, it is possible to enroll for one week. Those who wish may enroll for any week which holds greatest interest for them.

While this course is designed especially for public health nurses, other interested people such as community workers, social workers, health educators, and teachers, are invited to enroll.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. George T. Harrell, Jr., professor of medicine, met with representatives of other Southern medical schools at Oak Ridge, Tennessee, March 1 and 2, to work out a plan whereby the schools can supply the medical research staff for the Oak Ridge Hospital. The hospital is initiating clinical research in the treatment of leukemias and other malignant diseases, using short-lived radio-isotopes directly from the nuclear reactor there. The Atomic Energy Commission and Institute of Nuclear Studies at Oak Ridge jointly sponsored the meeting.

Dr. Harrell and Dr. David Cayer attended a course in the study of nuclear energy and the medical effects of the atomic bomb at the Army Medical School in Washington, D. C., in February.

* * * *

Miss Gladys E. Frazier of Rochester, New York, has joined the staff of the department of neuropsychiatry as psychiatric social worker. Joseph A. Grassi, former head of the psychology department at the State Hospital in Fairfield, Connecticut, is new associate in clinical psychology at Graylyn.

* * * *

Dr. Manson Meads, instructor in medicine, has been appointed a "Scholar in Medical Science" by the John and Mary R. Markle Foundation in its new post-fellowship program to provide an opportunity for promising scientists to develop as teachers and investigators. He is one of sixteen men in the country to be named for such an appointment. The appointment carries with it a grant of \$25,000, payable to the cooperating medical school at the rate of \$5,000 annually for five years.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

During 1947, according to the provisional report of the Bureau of Vital Statistics, 113,020 babies were born in North Carolina, an increase of 12,425 over the previous year. The 1947 birth rate of 29.3 is the highest since 1925, when a birth rate of 29.7 was recorded. The 1946 birth rate in North Carolina was 26.3.

The infant mortality rate last year was only 35.4, as compared with 37.9 the previous year—a decrease of 2.5. The infant mortality rate is based on the number of babies under a year old who die, for every one thousand live births. The maternal death rate last year was 1.8, compared with 2.0 the previous year. This rate is based on the number of mothers who die for every one thousand live births.

Births outnumbered deaths in North Carolina last year, by more than three to one. The death rate for 1947 was 7.8, with 30,252 deaths from all causes. There were just 6 deaths from typhoid fever, 33 from diphtheria, 54 from whooping cough, and 2 from malaria. Death rates from degenerative diseases continue to climb. Of the 30,252 deaths from all causes reported to the State Board of Health last year, 13,643 were caused by diseases of the heart and circulatory system. The death rate from pulmonary tuberculosis last year was only 25.4, as compared with 27.9 in 1946.

In recognition of the work being done by Miss Annie Gaynor, city health nurse, in connection with the club's Hard-of-Hearing Project, the Rocky Mount Exchange Club designated one of its regular weekly meetings as "Annie Gaynor Night." J. D. Weaver, past president of the club, after reviewing the accomplishments of the Hard-of-Hearing Project, presented Miss Gaynor with a traveling bag as a token of appreciation for the faithful work she is doing in the Rocky Mount Schools to determine which of the children have hearing deficiencies.

* * * *

Last year Dr. R. A. Kesler, chairman of the American Veterinary Medical Association's special committee on rabies, called a meeting of representatives of the American Public Health Association, the American Medical Association, the United States Public Health Service and other interested organizations, which was held at the University of Pennsylvania. The Conference unanimously agreed that in a program for the control of rabies in the United States prime consideration must be given to (1) adequate diagnostic facilities, (2) the control of animals capable of transmitting the disease, and (3) mass immunization of susceptible animals, particularly dogs.

Control measures for animals capable of transmitting rabies should include:

- (a) Licensing of all dogs.
- (b) Proper disposition of ownerless, unwanted and stray domestic animal pets.
- (c) As soon as rabies appears in a community, strict control of all dogs should be enforced for whatever period of time may be considered necessary. Dogs should not be permitted to run at large.
- (d) Dogs which have bitten persons or other animals, and dogs which are suspected of having rabies should be confined in a suitable, authorized place under veterinary supervision for a period of not less than fourteen days.
- (e) Dogs known to have been exposed to rabies should be destroyed or kept confined for a period of not less than six months.
- (f) Dogs under 6 months of age, being particularly susceptible and less satisfactorily immunized than older animals, should be confined until the area is certified as officially free of rabies.
- (g) The control program should be continued for a period of at least 90 days subsequent to the last reported case of the disease.
- (h) Should rabies be found to exist in wild life prompt arrangements should be made for active cooperation with the U. S. Fish and Wild Life Service and the analogous agency of the state involved.

Mass Immunization.—The vaccination of dogs, combined with other control measures as indicated herein, provides the most satisfactory method for the prompt control of rabies. Vaccinated dogs, when properly tagged, may be allowed at large thirty days after vaccination. Vaccination should consist of at least one injection of an immunization dose of an accepted canine rabies vaccine. Evidence indicates that a single 5 cc. subcutaneous injection of an approved vaccine is effective in a mass vaccination program. However, the injection of three doses of vaccine in 5 cc. amounts a week apart provides greater immunization and should be advised when practical. For permanently reducing the number of susceptible dogs, it should be suggested that owners have their dogs immunized annually.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Mrs. Charles E. Platt of Charlotte, a member of the Board of Directors of the North Carolina Tuberculosis Association for twenty-four years, died on February 12.

NEW PUBLIC HEALTH NURSING COURSE AT NORTH CAROLINA COLLEGE

Miss Esther Henry, R.N., B.S., M.S., of New York city, has been appointed director of the course of Public Health Nursing at the North Carolina College in Durham. Miss Henry has a rich experience with official and non-official agencies. The appointment of Miss Henry and the opening of the first postgraduate course in public health nursing at North Carolina College is the realization of a dream of the late Dr. James E. Shepard.

SECOND DISTRICT MEDICAL SOCIETY

The Second District Medical Society met at New Bern on February 18 as guests of the Craven County Medical Society. The meeting was called to order by Dr. William Willis, and a delicious turkey dinner was enjoyed. About a hundred doctors and guests were present. After dinner Dr. W. L. Thomas, assistant professor of gynecology at the Duke University School of Medicine, read a paper on "Psychosomatic Gynecology." This paper was discussed by Dr. Leslie Lee of Kinston, Dr. John C. Tayloe of Washington, and Dr. Paul Whitaker of Kinston. Dr. R. D. McMillan, secretary of the North Carolina Medical Society, then made an address.

It was decided to have the next meeting at Kinston. Dr. Floyd Wooten was elected president and Dr. Leslie Lee secretary.

FOURTH DISTRICT MEDICAL SOCIETY

The Fourth District Medical Society met with the Edgecombe-Nash Counties Society in Rocky Mount on February 10. Dr. K. D. Weeks spoke on "Congenital Heart Disease" and Dr. Kenneth Wright on "Hernia."

FORSYTH COUNTY MEDICAL SOCIETY

Dr. Louis N. Katz of Chicago was guest speaker at the February meeting of the Forsyth County Medical Society, held in Winston-Salem on February 10. His subject was "Principles of Digitalis Therapy."

NEW HANOVER COUNTY MEDICAL SOCIETY

The February meeting of the New Hanover County Medical Society was held at the U. S. Naval Hospital, Camp Lejeune, where the members of the Society were guests at the Naval Hospital. Following dinner Dr. R. B. Rodman spoke on "Hypertension" and Dr. W. S. Doshier on "Newer Advances in Obstetrics."

Recently the chiefs of the Medical and Surgical Services at Camp Lejeune presented papers at the regular monthly meeting of the New Hanover County Medical Society.

NEWS NOTES

Dr. Thomas F. Vestal, for the past five years director of the Division of Tuberculosis Control of the State Board of Health, resigned last month to become superintendent and medical director of the Forsyth County General Hospital and Home for the Indigent and Infirm.

RECORDING YOUR DATA IN THE NEW AMERICAN MEDICAL DIRECTORY

The American Medical Association reports that 115,000 physicians have returned their Directory Information Cards supplying data for the new **American Medical Directory** now being compiled. Those physicians who have received these cards and have not returned them are urged to do so at once. This information is needed for your listing in the 1949 directory.

Please use the card that has been addressed to you, as it bears the serial number which has been assigned to your data. If a card is received by you addressed to another physician who has moved away, return the card with the doctor's new address written on the slip bearing his name and serial number if you can supply the information.

Before filling out your card, check the list of specialties on the back of the card and select only one specialty, indicating, in the space provided on the front of the card, either that your practice is limited to that specialty or that you give special attention to that branch of medicine along with general practice. Fill in the lines marked "Intern" and "Resident" only if you are now serving an internship or residency in a hospital.

A second request with a duplicate Information Card will be sent very soon to all physicians from whom cards have not been received so that they may have an opportunity to supply the necessary information for their listing in the Directory.

In checking the information cards received from physicians, the Directory Department of the A.M.A. reports that it becomes increasingly apparent that many are not aware of the difference between "Membership" and "Fellowship" in the American Medical Association. Here are the official definitions:

Every MEMBER in good standing in the constituent medical association of the state in which he is engaged in practice whose name is officially reported to the Secretary of the American Medical Association for enrollment becomes automatically a MEMBER of the American Medical Association and is not called on, as such, to pay any dues or to contribute financially to the Association.

MEMBERS of the American Medical Association are eligible to apply for FELLOWSHIP. To qualify as a FELLOW, a MEMBER in good standing is required to make formal application for FELLOWSHIP, to pay FELLOWSHIP dues and to subscribe for *The Journal*. Applications must be approved by the Judicial Council. FELLOWSHIP dues and subscription to *The Journal* are both included in one annual payment of \$12.00, which is the cost of *The Journal* to subscribers who are not FELLOWS. MEMBERS of constituent state medical associations pay dues to those bodies, but as MEMBERS they pay nothing to the American Medical Association. FELLOWS pay dues and subscription to *The Journal* in the sum of \$12.00 a year, which has nothing to do with county or state dues.

According to an amendment to the By-Laws of the American Medical Association, no physician may be officially recorded as a MEMBER of the American Medical Association except on the basis of membership in one constituent state medical association, and that one the association of the state in which the physician concerned maintains legal residence and engages in the practice of medicine.

Each Fellow receives a Fellowship Card from the Association annually as payment of his dues is recorded, which card is presented for admission to the Annual Meetings of the Association.

Physicians who are eligible for Fellowship should make formal application immediately so that they may attend the Chicago Session and so that a record of their Fellowship may be received in time to include the Fellowship symbol in their data listed in the new **American Medical Directory**.

MENTAL HYGIENE SOCIETY OF VIRGINIA

The eleventh annual meeting of the Mental Hygiene Society of Virginia was held at the Medical College of Virginia in Richmond on February 19.

SEMINAR IN PSYCHIATRY

The Department of Mental Hygiene and Hospitals, the American Psychiatric Association, the Medical Society of Virginia, and the U. S. Public Health Service have planned a two-week seminar in psychiatry, to be held in Richmond from April 5, to April 16 inclusive. During this two-week period it is expected that the various phases of mental disease and hospital treatment will be covered by such widely known physicians as Dr. Franklin G. Ebaugh, Director of the Colorado Psychopathic Hospital, Denver, Colorado; Dr. Thomas M. French, Chicago Institute of Psychoanalysis; Dr. Samuel W. Hamilton, Superintendent of Essex County Hospital, New Jersey; Dr. Gregory Zilboorg, New York City; Dr. R. Finley Gayle, Dr. David C. Wilson, Dr. J. Asa Shield, of Virginia; Dr. John Whiteborn, Johns Hopkins University; Dr. Winfred Overholser, Washington, D. C., President of the American Psychiatric Association; Dr. Frederick H. Allen, Director of the Philadelphia Child Guidance Clinic; Dr. Leo Kanner, Johns Hopkins University; Dr. Robert H. Felix, U. S. Public Health Service; Dr. C. C. Burlingame, of the Institute for Living, Hartford, Connecticut; Dr. Leland Hinsie, Professor of Psychiatry, Columbia; Dr. Abraham Myerson, Boston, Massachusetts; Dr. Nolan D. C. Lewis, New York City, and many others.

There will be no charge for attendance at this seminar and it will be open to all physicians, psychologists, and associated workers in the field of psychiatry.

OPHTHALMOLOGIC CLINICS ON BETA IRRADIATION WITH RADIUM "D"

A. D. Ruedemann, M.D., F.A.C.S., Professor and head of the Department of Ophthalmology, Wayne University College of Medicine, Detroit, will give clinics on Beta irradiation in Ophthalmology at the City of Detroit Receiving Hospital, Macomb and St. Antoine Streets, every other Wednesday from 10 to noon until June, beginning March 10. The use of the new radium "D" ophthalmologic applicator will be demonstrated. All ethical specialists are invited to attend.

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS

The thirty-third annual meeting of the American Association of Industrial Physicians and Surgeons and participating allied groups will be held at the Hotel Statler in Boston, March 27-April 4. Physicians, nurses, and all persons interested in the field of industrial medicine are invited to attend.

THE AMERICAN SOCIETY FOR THE STUDY OF STERILITY

The American Society for the Study of Sterility is holding its Fourth Annual National Session on June 21 and 22, 1948, at the Congress Hotel in Chicago. The two-day program will be divided into a special series of panel discussions on male infertility, with papers to be read on female and miscellaneous infertility aspects on the second day.

Additional information may be obtained from the secretary, Dr. John O. Haman, 490 Post Street, San Francisco 2, California.

SIXTEEN SCHOLARS IN MEDICAL SCIENCE ANNOUNCED BY MARKLE FOUNDATION

Sixteen young scientists have been appointed as the first group of Scholars in Medical Science, under the plan announced last fall by the John and Mary R. Markle Foundation to support qualified young scientists who wish to make a career in academic medicine. The Scholars were selected from candidates nominated by accredited medical schools in the United States and Canada by regional committees appointed by the Foundation. Toward the support of the Scholars and their research the Foundation has allocated a total of \$400,000 to their respective medical schools, each school to receive \$25,000 payable at the rate of \$5,000 annually for five years.

As faculty members of the participating medical schools, the Scholars will devote the next five years to teaching and research, at the end of which time they will have had an opportunity to become established teachers and investigators. According to John M. Russell, Executive Director of the Foundation, an undetermined number of Scholars will be appointed each year for the next few years for the long-range purpose of strengthening the faculties of medical schools, and medical education generally.

Among the sixteen Scholars whose appointments begin in 1948 are Ivan W. Brown, Jr., of the Duke University School of Medicine, whose field of research is injury produced by transfusion; and Manson Meads, of the Bowman Gray School of Medicine, whose field of research is infectious diseases.

FEDERAL SECURITY AGENCY

Oscar R. Ewing, Federal Security Administrator, has announced the formation of a National Health Assembly, to be held in Washington, May 1-4. The Assembly is being set up as a result of the message of President Truman to Mr. Ewing of January 30 in which Mr. Ewing was requested to develop feasible national health goals for the next ten years.

Twenty-four national leaders in various fields have been invited by Mr. Ewing to serve on the executive committee of the Assembly, which will

consist of representatives of public and private organizations and agencies in the country concerned with various phases of the nation's health. Preliminary estimates are that 700-800 people will attend the Assembly sessions.

UNITED STATES PUBLIC HEALTH SERVICE

Dr. Leonard A. Scheele, assistant surgeon general of the United States Public Health Service and director of the Cancer Institute, has been named to succeed Dr. Thomas Parran as surgeon general when the latter's term expires in April.

* * * *

Previously withheld from publication for security reasons, results of research on the blood fluke infection, schistosomiasis, have been released by the U. S. Public Health Service of the Federal Security Agency in "Studies on Schistosomiasis," National Institute of Health Bulletin No. 189.

The 212-page "Studies on Schistosomiasis" may be purchased through the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 50 cents per copy.

* * * *

Fellowships leading to a Master's Degree in Public Health in the field of Health Education are again being offered to any qualified United States citizen between the ages of 22 and 40, according to a statement released recently by the United States Public Health Service, Federal Security Agency. Funds are available through a grant from the National Foundation for Infantile Paralysis.

Information and application blanks may be obtained by writing the National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York.

NATIONAL NEGRO HEALTH WEEK

April 4-April 11, 1948

The need for a health plan for the individual Negro and his family will be emphasized in this year's National Negro Health Week, scheduled for April 4 to 11. Chairman of the Health Week Committee is Dr. Roscoe C. Brown, chief of the Office of Negro Health Work, Public Health Service, Federal Security Agency.

Special tribute will be paid to Booker T. Washington, whose birthday will be celebrated on April 5. Dr. Washington founded the Health Week movement in 1915. After his death, the annual program was carried on at Tuskegee Institute and Howard University until 1932, when it was made a part of the Public Health Service year-round activities.

The theme of this year's National Negro Health Week will be "A Practical Health Program for Myself and My Family. Learn what we ought to know—Health Education. Do what we ought to do—Healthful Living."

Groups interested in taking part in National Negro Health Week activities may obtain information and supplies by writing Dr. Roscoe C. Brown, chief, Office of Negro Health Work, U. S. Public Health Service, Federal Security Agency, Washington 25, D. C. For information about the observance of Health Week in their own communities, they may get in touch with their state, county or local health department.

(BULLETIN BOARD CONTINUED ON PAGE 172)

BOOK REVIEWS

A Text-Book of Pathology. By William Boyd, M.D., Dipl. Psych., M.R.C.P., Edin.; F.R.C.P., Lond.; LL.D., Sask.; M.D., Oslo; F.R.S.C. Professor of Pathology and Bacteriology of the University of Toronto. Ed. 5. Price, \$10.00. 1049 pages. Philadelphia: Lea and Febiger, 1947.

The latest revision of this fine standard textbook continues the high standard set in previous editions. The subtitle, "An Introduction to Medicine," sets the tone of the book. Pathology is presented with a physiologic outlook in an attempt to bring together knowledge on disease processes from all the fields of medicine. The first portion discusses general principles of pathologic processes. The second portion discusses lesions in specific organs.

The book is very generously illustrated with photographs and photomicrographs—a technique which gives a true representation of the changes seen visually. A few drawings are used, of which some are in color; they add little to the book. The few color photographs are far superior. Many references are quite old.

The book is not intended to be used as a reference book by practicing pathologists. It is written from the viewpoint of the student, both undergraduate and graduate. It should be very useful for practicing physicians who wish to review the subject or to get a fresh outlook on disease in their patients.

Dermatologic Clues to Internal Disease. By Howard T. Behrman, M. D., Assistant Clinical Professor of Dermatology, New York University College of Medicine. 165 pages. Price, \$5.00. New York: Grune and Stratton, Inc., 1947.

The preface of this book states that there is an apparent need for a correlation of the manifestations of skin disorders with those arising in some visceral dysfunctions. If correlation is to be considered the author's purpose, it is this reviewer's opinion that he falls far short of the goal. The book consists of an alphabetical list of diseases, ranging from acanthosis nigricans to yellow fever, with a brief description of the cutaneous lesions that may appear in each condition. Little attempt is made to distinguish between rare cutaneous lesions and the more common types that are useful for diagnosis. No correlation is offered between the various diagnostic categories discussed, even when the skin lesions are similar, and little effort is made to correlate the skin findings with the more basic internal dysfunction.

As the descriptions are listed only by diagnosis, it is necessary to make the diagnosis, or suspect it, before consulting the text. The inclusion of the term "clues" in the title is therefore somewhat misleading. The author states that he has avoided "lengthy dissertations" and "disconcerting theoretical controversies," and the text thus contains no indication that there might be any difference of opinion among authorities about any of the topics mentioned. As there is no index and no table of contents, the book would be most difficult to use for reference, especially in conditions that have been given more than one diagnostic term.

The photographs are the most interesting part of the book, 118 illustrations being offered.

Handbook of Communicable Diseases. By Franklin H. Top, A.B., M.D., M.P.H., F.A.C.P., Medical Director, Herman Kiefer Hospital; Clinical Professor of Preventive Medicine and Public Health, Wayne University College of Medicine; Extramural Lecturer in Infectious Diseases and Epidemiology, School of Public Health, University of Michigan; Consultant, Preventive Medicine Section, Surgeon General's Office, United States Army. Ed. 2. Price \$9.50. 992 pages. St. Louis: The C. V. Mosby Company, 1947.

The author continues the useful organization of material found in the first edition. The relationship between the infecting agent and the immunity of the host is considered. The methods of preventing communicable disease and the principles of nursing care, both in the home and in the hospital, are covered. The specific diseases are classified by the portal of entry into the body—respiratory tract, gastrointestinal system, mucous membranes, or skin. Each classification is further subdivided according to the type of infecting agent—fungi, bacteria, or viruses.

The appendix contains informative tables on the frequency of complications in the most common infectious diseases, and on quarantine regulations, spinal fluid findings, and the schedule for therapy of syphilis. Both the black-and-white and the color illustrations are good. References to specific points and general references have been kept up to date and are found at the end of each chapter.

Many additions have been made to the second edition, such as the chapters on atypical pneumonia, rheumatic fever, and infectious hepatitis. In some places throughout the book the discussions of chemotherapy are not always up to date, but advances in this field are very rapid. It is surprising that the author has kept so well abreast of recent practice. The book is recommended for students and practitioners.

Elements of Genetics. By Edward C. Colin, Ph.D., Chicago Teachers College. Ed. 2. 402 pages. Price, \$3.50. Philadelphia: The Blakiston Company, 1946.

The second edition of Colin's textbook of genetics carries the subtitle, "Mendel's Laws of Heredity with Special Application to Man." The material covered has been thoroughly revised and brought up to date since the 1941 edition. The author states that his purpose is to present a clear and readable account of the elements of the science of genetics, and he has succeeded in covering the essential principles in a concise and easily understandable manner.

The importance of hereditary factors in determining predisposition to disease is rapidly becoming more widely recognized. Physicians are finding that a ready source of reference to basic principles of genetics is increasingly useful. This book is recommended as an adequate source of basic information, and throughout the text one will find examples of the application of principles to specific situations in human families.

A glossary of genetic terms is appended, and the index is adequate for easy reference. The text is illustrated by ninety photographs and drawings.

Minor Surgery. By Frederick Christopher, M.D., F.A.C.S., Associate Professor of Surgery at Northwestern University Medical School, Chief Surgeon, Evanston (Illinois) Hospital. Ed. 6. 1058 pages, 937 illustrations on 595 figures. Price, \$12.00. Philadelphia & London: W. B. Saunders Company, 1948.

This volume presents a detailed review of the literature on each subject discussed, and in this fact lies its major fault. For example, 451 references are given on open lesions and 409 on injuries of the upper extremities. So numerous are the authors quoted that their various opinions, at times contradictory, produce confusion instead of giving a definite idea as to pathogenesis, diagnosis and treatment. In this respect, and in the organization, this volume falls far below the high standard set by the author's *Textbook of Surgery*.

The relative lack of organization produces frequent repetitions, and a particular example of wasted space is the nearly identical paragraphs on tennis leg found on pages 6 and 749. Drugs and dosage are given in the apothecary or metric system, apparently without plan; and occasionally both are used in the same prescription, the drugs being written in Latin and the amounts in grams. From this practice a serious error results on page 292, where the dose of sodium luminal for restlessness due to head injury is given as 2 Gm. hypodermically. A few omissions are of major import, such as failure to mention lower nephron nephrosis under the discussion of burns, sucrose, sulfonamides, or blood transfusion, and to warn of homologous serum jaundice in the section on plasma administration. Greater unity and usefulness would be attained if less were written about the very rare lesions and about apparently outmoded ideas. The number of typographical errors is greater than is usually seen in a book by this publisher.

Because of the extensive review of the literature provided, this volume may be recommended as a source for references. Although the author implies in the preface that the book is intended for those less well trained in surgery, it would appear that this is the group for which it is least suited. Considerable experience would be necessary to select the best from the several methods of treatment given in many instances.

Sex Power in Marriage. By Edwin W. Hirsch, B.S., M.D. 218 pages. Price, \$3.00. Chicago: Research Publications, 1947.

Sigmund Freud certainly started something—to use a slang phrase—when he stressed the importance of sex in psychology. Much has been written about the necessity of maintaining a normal outlook upon sex life, especially after marriage. This little book of Dr. Hirsch's discusses frankly, but decently, the prevalence of sexual difficulties, and suggests ways for overcoming them. It is perhaps as safe a guide to attaining a normal sex life as most that have been offered the public.

A number of case reports make up the last chapter in the book, and should help intelligent laymen to understand themselves.

Psychopathology and Education of the Brain Injured Child. By Alfred A. Strauss, Psycho-Educational Consultant, Evanston, Illinois; President, Cove Schools for Brain-Injured Children, Racine, Wisconsin; and Laura E. Lehtunin, Psycho-Educational Director, Cove Schools for Brain-Injured Children. 206 pages. Price, \$5.00. New York: Grune and Stratton, Inc., 1947.

The authors present the thesis of this volume as follows: "A brain injured child is a child who before, during, or after birth has received an injury to or suffered an infection of the brain. As a result of such organic impairment, defects of the neuromotor system may be present or absent; however, such a child may show disturbances in perception, thinking, and emotional behavior, either separately or in combination. These disturbances can be demonstrated by specific tests. These disturbances prevent or impede a normal learning process. Special educational methods have been devised to remedy these specific handicaps."

It is the belief of the authors that the brain injured child can be distinguished from the defective child and from the behavior problem. The criteria on which this distinction can be made are: first, the history of head injury either before, during or subsequent to birth; second, the presence of certain neurologic abnormalities on physical examination; third, the finding of a single child with low intelligence among siblings and relatives of good intelligence; and fourth, the presence of certain specific psychologic disturbances as seen on special qualitative tests.

It is suggested that certain psychologic disturbances result from brain injury, regardless of the location of the injury. The most outstanding characteristics of these disturbances are: (1) disinhibition (driveness); (2) the catastrophic reaction (Goldstein); (3) distractibility, or forced responsiveness to stimuli (evidenced by undue fixation upon irrelevant stimuli and instability between figure and ground patterns); (4) perseveration (the persistent repetition or continuation of an action once begun); (5) the use of substitutions and detours in the performance of difficult tasks.

The authors describe in detail the method of testing individuals suffering from these defects and the ways by which the brain injured child can be distinguished from the defective or maladjusted one. After analyzing the defects observed, they then present in detail the training methods which they have found helpful in teaching brain injured children.

The book is an excellent presentation of methods of study in such cases and of teaching methods which may be used in dealing with specific problems. The thorough attention to detail in dealing with individual cases, the careful analysis of the particular defects noted, and the presentation of specific measures which are used in dealing with them in individual cases make the book particularly useful.

This book is a valuable addition to the library of anyone concerned with the diagnosis and treatment of brain injured children.

BULLETIN BOARD

(CONTINUED FROM PAGE 169)

VETERANS ADMINISTRATION

Medical records of more than 100,000 ill and disabled World War II veterans will be used to aid researchers in their efforts to discover the causes and cures of little-known diseases and unusual injuries.

Object of the program is to analyze the medical records of such veterans, and through study of the history of their ailments and of the medical treatment given, thus attempt to arrive at sound medical conclusions and recommendations for the care of others who might incur these same disabilities.

The work will cover a wide variety of diseases and injuries. Among the studies already underway is one on neuropathologic changes in peripheral nerve injury, which is being conducted by Dr. Barnes Woodhall at the Duke University School of Medicine.

* * * *

Carl R. Gray, Jr., Administrator of Veterans Affairs, has announced that Veterans Administration will reduce its personnel by approximately 8,500 employees before the end of the current fiscal year, June 30, 1948.

The planned reductions are to be made in services other than medical. No decreases are contemplated in the VA medical program for the balance of this fiscal year, ending June 30, 1948. In VA's recommended budget for the fiscal year 1949, an increase is proposed in the medical program.

PREVENTIVE MEDICINE GETS INTERIM SPECIALTY BOARD

Consultants and practitioners of preventive medicine, one of the least formalized but most universally important branches of medical science, learned that a great forward step toward professional recognition of their calling as a distinct medical specialty has been made by the formation of an "Interim Board" of Preventive Medicine. Announcement of the move was made jointly by the Surgeon General of the Army, Navy, and U. S. Public Health Service.

AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons takes pleasure in announcing the completion of a new teaching film "Anomalies of the Bile Ducts and Blood Vessels: Strictures of the Common Duct." This film is now available for loan or purchase and is the first in the series of teaching films being produced under the expanded motion picture program.

The picture was directed by Warren H. Cole, Professor of Surgery and Head of the Department, University of Illinois School of Medicine, with the cooperation of an advisory committee. Inquiries may be directed to Ethicon Suture Laboratories, Division of Johnson & Johnson, New Brunswick, New Jersey.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

The 1948 edition of "Facts and Figures about Infantile Paralysis," a publication of the National Foundation for Infantile Paralysis, is now available to physicians and public health workers. Statistics on the disease, revised yearly, are gathered from the United States Public Health Service, state health departments and various other sources.

Copies of the booklet (No. 59) may be secured free of charge by writing Education Service, The National Foundation for Infantile Paralysis, 120 Broadway, New York 5, N. Y.

THIS WEEK IN CHICAGO MEDICINE

The Chicago Medical Society has inaugurated a weekly mimeographed publication entitled "This Week in Chicago Medicine." It has been designed to keep the medical profession posted on "what's going on" and to aid out-of-town physicians who may be in Chicago and wish to visit clinics, conferences, round tables or medical meetings.

Any doctor planning a trip to Chicago may secure copies of this bulletin by writing to the Chicago Medical Society, 30 North Michigan Avenue, Chicago 2, or he may secure copies by calling in person.

FOR SALE

Lake Lure, North Carolina

Charming mountain retreat in beautiful Blue Ridge, suitable for physician or patient seeking peace and quiet. One story, rambling house with 3½ acres finest woodland and ravines. Three bedrooms, three baths, vaulted living room, huge stone fireplace, dining room, modern kitchen, screened porch, luxurious closet space, knotty pine interior. Concrete basement, oil furnace, hot water heater, laundry tubs. Suitable year-round. In best repair. Price, \$19,500.

For further details address:

Office of Business Manager, North Carolina Medical Journal, Red Springs, N. C.

KNOW YOUR HEART, by Howard Blakeslee, is Pamphlet No. 137 in the series of popular, factual, 20-cent pamphlets issued by the Public Affairs Committee, Inc., a non-profit educational organization at 22 East 38th Street, New York 16, N. Y.

Indications for Protolysate

Low residue, high protein diets, often needed by surgical patients, are more easily formulated when Protolysate is included. The ability of Protolysate to buffer gastric acidity while providing nitrogen nutrition has produced increasing clinical evidence of its value in peptic ulcer. The digestive burden is not increased when Protolysate is used as a dietary supplement.

For literature and professional samples of Protolysate write Mead Johnson & Co., Evansville 21, Indiana.



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HORMONES IN UROLOGY

REED M. NESBIT, M.D.

and

JACK LAPIDES, M.D.

ANN ARBOR, MICHIGAN

This discussion will be limited to endocrine therapy in testicular dysfunctions and in carcinoma of the prostate.

Testicular Disorders

In order to comprehend fully the various treatments for testicular disorders, one must know something about the physiology of the pituitary gland as well as of the testes. The primary function of the testes is to ensure survival of the race. Thus, the testes must not only produce spermatozoa, but must also elaborate an androgenic hormone which will make it possible for the male to demonstrate sexual reactions to the female, and will develop and maintain the accessory reproductive organs so that effective insemination can be accomplished. Numerous workers have shown that testosterone or similar androgens will stimulate the growth of the penis, seminal vesicles and scrotum, will cause descent of the testes, and will activate the growth of the prostate and its glandular elements to produce acid phosphatase and other components of prostatic secretion. These developments, which are normally part of pubescence, enable the male to deposit his spermatozoa in the proper place and in a medium of prostatic and seminal secretion, which will ensure survival of the spermatozoa for a long enough period to permit fertilization of the ovum. Other changes occurring in the male at puberty are deepening of the voice, with an

increase in the size of the laryngeal prominence; growth of hair in the pubic, axillary, and facial regions; increase in the rate of epiphyseal maturity; stimulation of muscular development, with an increase in strength and endurance.

Spermatozoa are produced in the seminiferous tubules, while the androgenic hormone is elaborated by the interstitial or Leydig cells. In general, these separate testicular functions respond in a parallel manner to the influence of many agents; in a person affected by inanition, for example, there is diminution of the androgenic secretion and also a decrease in spermatogenesis. There are a few situations, however, in which spermatogenesis is diminished or completely absent, while androgen production is normal; such situations may occur in patients with irradiated or cryptorchid testes.

The spermatogenic and endocrine functions of the testes are induced and maintained by gonadotropins from the basophilic cells of the anterior lobe of the pituitary. The secretions of the testes in turn inhibit or limit the production of the gonad-stimulating material. A delicate balance thus exists between pituitary function and gonadal function; a loss of testicular function leads to increased secretion of pituitary gonadotropins, whereas an interstitial cell tumor of the testis or the administration of exogenous androgens (for example, testosterone propionate) suppresses pituitary production of the gonadotropic substances. A loss or diminution in pituitary function diminishes the secretion of androgen by the

Read at the Watts Hospital Medical and Surgical Symposium, Durham, February 11, 1948.

From the Department of Surgery, University of Michigan Medical School, Ann Arbor, Michigan.

testes, while injection of the gonadotropic principle from the pituitary stimulates production of the testicular hormone. There is considerable evidence at the present time to indicate that the fluctuations in urinary gonadotropin levels may depend upon the ability of the testes to metabolize the pituitary gonadotropic material rather than upon a mysterious inhibitory effect exerted by the testes.

The pituitary gland stimulates the gonads in two ways: the follicle-stimulating hormone influences the spermatogenic function of the seminiferous tubules, and the luteinizing hormone regulates the activity of the interstitial cells in their production of male hormone. The urine of pregnant women contains a gonadotropic hormone elaborated by the chorionic cells of the placenta. It has been named chorionic gonadotropin, and superficially behaves like the luteinizing hormone of the pituitary. Another type of gonadotropic hormone is produced by the placenta of the pregnant mare and is present in the blood of that animal during pregnancy. It differs from human pregnancy gonadotropin in two respects: (1) it is not excreted in the urine, and (2) it possesses both follicle-stimulating and luteinizing properties. Preparations of all three types of hormones have been used clinically.

Cryptorchidism

A testicular abnormality occurring quite commonly in childhood is cryptorchidism, or failure of one or both testes to descend into the scrotum properly. It is stated that in the majority of cases the descent of the testes is completed during the ninth month of fetal life. It is not uncommon, however, for boys to have partially descended testes until the age of puberty, at which time descent is completed. One must distinguish between true cryptorchidism and pseudo-cryptorchidism before any therapy is contemplated. Intermittent retraction of the testes is commonly confused with true retention. Hamilton and Hubert⁽¹⁾ have described a technique whereby true retention can be distinguished from false retention. Essentially it consists in putting the child at ease and doing a mock painless examination of the scrotum. Then a hot water bag

wrapped in flannel is applied to the scrotum, groin and perineum, and the patient is covered with blankets. After thirty minutes the examination is repeated. Another method that we have employed involves observation by the mother or physician when the child is asleep in bed. In cases of pseudocryptorchidism, the relaxing effect of warmth will usually cause both testicles to descend into the scrotum.

No testis should be allowed to remain undescended after the onset of puberty, for the following reasons: (1) Spermatogenesis is inhibited or prevented by body temperature at the abnormal site, and the normal development of this function can occur only when the testis is situated in the scrotum, where the temperature is optimal for spermatogenesis; (2) the incidence of testicular tumors in ectopic testes has been found by Lewis⁽²⁾ to be twenty-two times as great as in normal gonads. Unfortunately, this high incidence prevails even if the undescended testes are brought down into the scrotum. Unobserved development of testicular tumor, however, is less likely if the gonad is in the scrotum than if it is in the abdomen.

Therapy for cryptorchidism involves the use of surgery, endocrines, or a combination of both. In cases of unilateral cryptorchidism surgery alone is employed as soon as the condition is diagnosed. It is believed that in such cases the failure of descent is due to anatomic factors such as fibrous bands, or abnormal direction of the peritoneal process, and not to hormonal deficiency. If true bilateral cryptorchidism is diagnosed, no treatment is initiated until the age of puberty is reached. At that time therapy with chorionic gonadotropin is given an adequate trial—100-500 international units being administered intramuscularly three to six times per week for eight weeks. If descent does not occur at the end of this period, then surgery should be performed.

It is the policy of the University of Michigan Urology Clinic not to use hormone therapy before pubescence. Numerous workers have demonstrated that the administration of either testosterone or gonadotropin before puberty can result in marked growth of the penis, deepening of the voice, premature

1. Hamilton, J. B. and Hubert, G.: Differential Diagnosis of Pseudocryptorchidism and True Cryptorchidism. *Endocrinology*, 21:641-648 (Sept.) 1937.

2. Lewis, L. C.: Testis Tumors, *J. Urol.* 59:763-772 (April) 1945.

closure of the epiphyses, growth of pubic, axillary and trunk hair, and abnormal muscular development. In addition to the danger of dwarfism, premature somatic puberty is apt to have a deleterious effect on the psyche and mental development. Certainly the potential dangers of endocrine administration during early childhood should be emphasized, and the unnecessary or early employment of these hormones is to be deplored.

Eunuchoidism and eunuchism

When the secretion of the interstitial tissue of the testes is diminished or lacking, certain characteristic changes occur in the individual. Deficiency of testicular secretion beginning in childhood gives rise to the eunuchoid state, which is characterized by small genitalia, extraordinary length of the long bones, high-pitched voice, small laryngeal prominence, lack of muscular development, at times a characteristic distribution of adipose tissue, and a beard composed of fine hair.

Postpuberal interruption of testicular function, or the castrate state, will not affect the long bones, since closure of the epiphysis has already occurred. The secondary sexual characteristics show some evidences of regression, but such organs as the larynx and genitalia do not return to an immature state.

The eunuch may show a decrease in the 17-ketosteroids, and always shows an increase in the urinary gonadotropin level—a phenomenon that can be used to determine objectively a decrease or absence of testicular function. The skin is soft and of a pasty, sallow color, which is due to lack of cutaneous pigments (melanin). The volume of blood in the skin and the percentage of oxygenated hemoglobin are less than in normal men. The buttock, however, contains more blood than in normal men. The beard of the eunuchoid is soft, whereas the postpuberal castrate retains many hairs of large diameter. The hair and skin are quite dry, and sebaceous secretions are diminished. Acne does not occur in either type. In both eunuchoid and castrate men, adipose tissue may be deposited subcutaneously about the mammary glands, the mons pubis, and the trochanter. In the prepuberal eunuch the vocal pitch and range remain high, while the mature voice of the postpuberal castrate is largely maintained. Many of the patients

complain of fatigue and inability to carry on sustained work.

In the eunuchoid man the external genitalia are very small, and the prostate and seminal vesicles may not be palpable rectally. The postpuberal castrate individual demonstrates a mature penis, but the scrotum appears flat and small; and penile erections in general are of limited number and completeness, and semen is absent.

The use of androgens is clearly indicated after bilateral orchiectomy or in severe eunuchoidism, in order to relieve the fatigability and sexual incapacity of these individuals. Androgens should be administered to adolescents who demonstrate signs of delayed epiphyseal closure and hypogenitalism, in order to prevent the development of severe eunuchoidism.

In these children it is not always easy to establish the diagnosis early, because young boys vary in their body types and in the arrangement and amount of their subcutaneous adipose tissue; furthermore, the relative size of the genitalia is often difficult to evaluate.

The problem of hypogenitalism at puberty is thoroughly discussed in a recent article by Hurxthal⁽³⁾. His diagnostic criteria include accurate measurements of the gonads, endocrine assays, and in some instances testicular biopsy. Early recognition and treatment are desirable if the stigmas of eunuchoidism are to be avoided, and with this fact in mind the physician would be well advised to treat empirically any suspected cases at the time of pubescence. The use of gonadotropic hormones should be tried first, because in some instances the hypogenitalism appears to depend upon lack of the pituitary-gonad stimulus. In the event that this treatment fails, the condition may be due to primary testicular failure and may require the administration of testosterone in moderate doses. It has been pointed out that many patients recover permanently after short periods of treatment with these hormones.

In adult cases of eunuchoidism, therapy with testosterone produces marked masculinization even in persons castrate for more than a decade. Erectile ability may be enhanced within several hours; changes in blood volume and pigments of the skin take

3. Hurxthal, L. M.: Hypogenitalism During the Usual Time of Puberty. J.A.M.A. 136:12 19 (Jan. 3) 1948.

place within one hour after administration; and the genitalia, with the exception of the testis, demonstrate marked development. Systemically, there is retention of sodium chloride, nitrogen, and water; muscular development and vigor are markedly increased. The secondary sexual hair grows rapidly, the beard becoming stiffer within a few weeks, and the axillary and pubic hair increase in coarseness. In many patients acne appears after several weeks and the hair and skin appear more oily. The vocal pitch of the eunuchoid approaches that of the mature normal man. The testes do not assume normal function, but there is an increase in the secretions of the prostate and seminal vesicles; in fact, the amount of semen may be a rough index of the therapeutic response to androgen therapy. Since testosterone is essentially a form of substitution therapy, retrogressive changes occur when therapy is stopped.

Efficacious forms of androgenic hormone are testosterone propionate and methyl testosterone. Testosterone propionate is administered intramuscularly in a daily dose of 20-25 mg., while methyl testosterone is given orally in a daily dose of 50-100 mg. Deanesly and Parkes⁽⁴⁾ demonstrated that subcutaneous implantation of testosterone in the form of compressed pellets is economical, requires infrequent replacement, and affords a more prolonged and even stimulation than do other methods.

Infertility

Recently great interest and attention have been centered on the problem of infertility or sterility in the male. Methods have been developed for determining obvious abnormalities in the ejaculate of an individual. Essentially these procedures involve a study of the morphology, motility, and number of spermatozoa. If the examination reveals deviations from the normal, further investigations are instituted.

Complete absence or a persistently low count of spermatozoa necessitates excision of tissue from both testes for biopsy, in order to determine whether or not spermatozoa are being produced in a normal manner in the seminiferous tubules of the testis. If large numbers of mature spermatozoa are present and none are found in the ejaculate,

then there must be an obstruction of the efferent seminal passages—the most common locations being the vas deferens and the lower portions of the epididymis. Treatment for this type of abnormality involves such surgical procedures as vaso-epididymostomy, vaso-orchidostomy, and catheterization of the ejaculatory ducts. If biopsy reveals complete degeneration of the germinal epithelium associated with hyalinization or marked fibroblastic proliferation, then the situation is hopeless and no further procedures or therapeutic measures are advised.

Biopsy may demonstrate defective spermatogenesis—for example, spermatid cells progressing only to the spermatid stage, or germinal epithelium arrested at an early stage of spermatogenesis. Defective spermatogenesis may be due to any one or combination of ten or more etiologic factors. Briefly, they are heredity, nutrition, temperature, infections, neoplasms, circulation, irradiation, pressure, constitutional states, and endocrines. In this discussion only the endocrine factor in sterility will be considered.

As has been previously stated, a delicate reciprocal relationship exists between the anterior lobe of the pituitary gland and the testis. Hypofunction of the pituitary will lead to diminished activity and atrophy of the gonads. Hypoactivity of the gonads in turn will result in increased secretions of the gonadotropic principles of the pituitary. Thus, it is conceivable that mild hypofunction of the pituitary is the etiologic factor in some of the cases of infertility; this postulation has been supported by well authenticated reports of improvement following therapy with gonadotropins. The dosage of the gonadotropins to be used will not be given, since neither the precise indications for gonadotropic therapy nor the exact dosage has yet been established. In actual practice, hormone therapy is a measure of last resort and is administered only in cases where the patient is willing to try any form of therapy which offers even a remote chance of benefit.

The thyroid gland plays an obscure role in relation to the testis. It has been demonstrated that hypofunction of the thyroid is accompanied by a marked decrease in libido. Removal of the thyroid in the rat retards spermatogenesis. The use of thyroid in bar-

4. Deanesly, R. and Parkes, A. S.: Factors Influencing the Effectiveness of Administered Hormones, *Proc. Roy. Soc., London, S.B.*, 124:279-298 (Dec. 7) 1937.

ren women having a subnormal basal metabolic rate has resulted in a substantial number of pregnancies. On the basis of this meager evidence, thyroid might well be administered to infertile males who demonstrate a low basal metabolic rate.

The value of testosterone in stimulating spermatogenesis is questionable in the light of present knowledge. Heckel⁽⁵⁾ and McCullagh⁽⁶⁾ have shown that large doses of testosterone depress spermatogenesis, while Rubinstein⁽⁷⁾ and Hurxthal⁽³⁾ have observed stimulation of spermatogenesis with moderate doses of testosterone in certain cases of hypogenitalism. The use of testosterone, therefore, in the treatment of male sterility at the present seems to be based upon tenuous evidence.

The male climacteric

The syndrome termed the male climacteric has aroused the interest of both physicians and laymen in recent years. Heller and Myers⁽⁸⁾ have demonstrated that it is a definite entity and, because of its relatively rare occurrence, a pathologic entity rather than a physiologic one, as it is in the case of females. They have treated the disease successfully by administering androgenic hormones.

Symptomatically the patients complain of nervousness, fatigability, insomnia, decreased erotic urge, and sexual impotence; occasionally they suffer vasomotor disturbances in the nature of hot flashes. It should be noted, however, that these symptoms often occur in men who are known to possess active sexual vigor but who are suffering from fatigue, anxiety, or psychoneurosis. Moreover, modern surgeons have observed that men who are castrated for the treatment of prostatic cancer rarely exhibit the symptoms of nervousness, fatigability, and insomnia. Indeed, castration among these individuals often appears to have somewhat the opposite effect—a fact which prompted Bumpus to comment that the procedure not only controls cancer, but changes many older men who have developed erascible dispositions from “roaring lions to gentle lions.”

tions from “roaring lions to gentle lions.”

It is evident that the male climacteric is an uncommon disease and that the majority of men who have complaints simulating this entity probably are suffering from fatigue, psychic disturbances, or malnutrition. The differential diagnosis is a matter of prime importance, since androgen therapy is expensive and can be definitely harmful when not specifically indicated. Heller and Myers⁽⁸⁾ have demonstrated, by testicular biopsy and urine gonadotropic assays, that dysfunction of the testes is the etiologic factor in the production of the male climacteric. In true cases of the male climacteric testosterone therapy produces a marked increase in the titer of the urinary gonadotropins and marked improvement in the patient. Withdrawal of androgenic therapy is followed by a return of symptoms. These characteristics seem to differentiate between psychoneurosis and the male climacteric.

The vasomotor disturbances which characterize the climacteric in women are usually lacking in the syndrome of the male climacteric, although hot flashes often occur in men following castration. These symptoms depend upon estrogen deprivation rather than on the absence or diminution of male hormone secretion, and symptomatic relief may be obtained by the administration of estrogenic hormones.

Carcinoma of the Prostate

A contraindication to androgenic therapy in the male climacteric is the presence of carcinoma of the prostate. Carcinoma of the prostate occurs in approximately 13 per cent of all men over 50 years of age in the United States, and is the cause of death in about 5 per cent. The palliative or suppressive endocrine treatment of prostatic cancers which cannot be removed by radical surgery commenced in 1941, following the epoch-making discoveries of Charles Huggins⁽⁹⁾, who in that year demonstrated a functional relationship between this disease and certain hormones. Since that time physicians have treated patients suffering from carcinoma of the prostate by the administration of estrogenic hormones and by surgical castration. The series of cases that

9. Huggins, C. and Hodges, C. V.: The Effect of Castration, of Estrogen, and of Androgen Injection on Serum Phosphatases in Metastatic Carcinoma of the Prostate, *Cancer Research* 1:293-297 (April) 1941.

5. Heckel, J. and Steinmetz, C. R.: Effect of Testosterone Propionate upon Seminal Fluid in Men, *J. Urol.* 45:118-123 (Jan.) 1941.
6. McCullagh, E. P. and McGurl, F. J.: Further Observations on Clinical Use of Testosterone Propionate, *J. Urol.* 42:1265-1273 (Dec.) 1939.
7. Rubinstein, H. S. and Kurland, A. A.: Effect of Testosterone Propionate on Spermatogenesis in Human, *South. M. J.* 32:499-503 (May) 1939.
8. Heller, C. G. and Myers, G. B.: The Male Climacteric, Its Symptomatology, Diagnosis and Treatment, *J.A.M.A.* 126:472-477 (Oct. 21) 1944.

are being reported currently from many clinics will doubtless provide a means for final evaluation of the methods that are being employed. Spectacular regression of the primary neoplasm has been observed in many of the patients, and, in some instances, have disappeared completely; but some of the patients have shown improvement of short duration only, and a few have apparently derived no benefit whatever from the endocrine modifications that have been employed. Some observers have suggested that carcinogenic activity in some cases might even be accelerated by the altered hormonal status.

It appears evident that a critical evaluation of endocrine therapy must take into consideration not only the spectacular remissions but also the failures, and must demonstrate as well whether the change in hormonal status produces any instances of adverse response. Such a critical evaluation must have control series of cases not treated by the newer methods to serve as a base line for comparative study. There are few such series reported in the literature, and those that are available are lacking in many of the statistical details essential to critical comparative analysis.

Follow-up study on 795 cases

We have recently made a follow-up study on 795 cases of prostatic carcinoma that were diagnosed and treated in the University of Michigan Hospital between the years 1925 and 1940, inclusive. All but 12 of the 795 patients have been followed by our survey; thus, data are available to us on 98½ per cent of the entire series of cases. Seven hundred and thirty-seven of the patients have been reported dead; 605 died of prostatic cancer, while 60 died following operations and 67 died of other causes—29 of cardiovascular disease. Five of the patients died of unknown causes.

The average survival time of the entire group was 21.2 months, the extremes being less than one month and fifteen years. The influence of metastases on the periods of survival is of interest. Four hundred and seventy-five of the patients had no evidence of metastasis at the time of diagnosis, and in these the average survival time was nearly two years, the extremes being less than one month and fifteen years. There

were 260 cases with metastases at the time of diagnosis; the average survival of these patients was seventeen months, the extremes being one month and 14 years, 8 months.

At the present time our two closed series of patients who are being treated by endocrine therapy (orchiectomy or stilbestrol) have been followed for approximately five and a half years, and the survival rates have recently been tabulated for comparison (table 1).

Table 1

Survival Rates to July, 1947 (Closed Series)

	Orchiectomy Series (75 cases)	Stilbestrol Series (50 cases)
Alive and symptom free.....	22.7%	18.0%
Dead or having recurrence of symptoms	77.3%	82%

These data suggest that the overall survival rates in the two series are approximately the same; and they demonstrate that neither form of therapy offers assurance of prolonged remission—a fact that should be borne in mind in determining the most suitable time to inaugurate endocrine therapy. Added information on the latter point is afforded by the survival data (table 2) on the patients who had cancer without metastases at the time treatment was initiated.

Table 2

Survival Rates—Patients without Metastases (Closed Series)

	Orchiectomy Series (45 cases)	Stilbestrol Series (33 cases)
Alive and symptom free.....	29%	27.2%
Dead or having recurrence of symptoms	71%	72.8%

It is evident that neither form of therapy prevents metastases or advance of the disease, and reason would seem to dictate that endocrine therapy should be regarded as a palliative measure only, and for that reason should be employed only in the advanced stages of the disease.

Estrogen therapy vs. orchiectomy

Many questions have arisen concerning the relative merits of the two methods of endocrine therapy that are under discussion. Huggins has steadfastly contended that castration is complete and that its effects are continuous; other observers have favored estrogen therapy, being of the opinion that stilbestrol neutralizes not only the testicular hormone, but also other hormones which might stimulate the growth of the tumor.

One obvious and practical disadvantage of estrogen therapy is the ever-present human attribute of forgetfulness and neglect. One fifth of the patients in our estrogen series forgot or failed to take their pills regularly; and at least two of the patients stopped taking the hormone altogether, after having obtained a remission, in the belief that the cancer had been cured! Another argument for castration is that some of the patients who failed to respond satisfactorily to estrogen therapy have had remission following castration, while none of the castration failures have been improved by estrogen therapy.

Additional evidence of interest in the comparison of the two methods of endocrine therapy is afforded by the survival data on patients who had demonstrable metastases at the time treatment was begun (table 3).

Table 3
Survival Rates of Patients with Metastases
(Closed Series)

	Orchiectomy Series (30 cases)	Stilbestrol Series (17 cases)
Alive and symptom free.....	13.3%	0%
Dead or having recurrence of symptoms	86.6%	100%

From these statistics it would appear that orchiectomy is more effective than estrogen therapy as a palliative measure in patients with metastasis. However, when the data are subjected to statistical analysis (chi-square formula and Yates correction), it is found that the differences between the orchiectomy series and the stilbestrol series are not statistically significant at the 5 per cent level in either table. This statement means that such differences might be expected to arise by chance more often than five times in a hundred, and we can, therefore, make no statistical statement regarding the superiority of one treatment over the other, other factors being equal. Critical analysis of larger series of cases over longer periods of time is necessary before final evaluations can be made, but the present series permit the inference that castration provides a better clinical response than does estrogen therapy alone.

Conclusion

In this brief discussion an attempt has been made to point out not only conditions in which hormones may be usefully em-

ployed but also some of the situations in which hormone therapy has no demonstrated value. It is apparent that precise indications for hormone therapy in urologic practice are few at the present time. Undoubtedly, future research will reveal additional disease syndromes which can be treated by endocrine therapy.

CLINICAL MANIFESTATIONS OF GLIOBLASTOMA MULTIFORME

A Review of Fifty Cases

FREDERICK H. HESSER, M.D.

DURHAM

The difficulties encountered in the differential diagnosis of brain tumor and other varieties of intracranial disease have long been a favorite topic for discussion. Slowly growing tumors, either benign (meningioma, acoustic neuroma) or malignant (astrocytoma), may remain undetected for comparatively long periods of time, but ultimately may develop fairly characteristic clinical signs. More malignant and rapidly developing intracranial neoplasms (glioblastoma, astroblastoma), on the other hand, may create so few or such diverse symptoms that clinical identification may be impossible until ventriculography and tissue study are done. Certain brain tumors are apt to develop in late adult life, and may be confused with the cerebral manifestations of other diseases which may appear in the same period—arteriosclerosis, hypertension, or presenile degeneration. Hastings⁽¹⁾, who reviewed 117 autopsies on patients with brain tumor, found that 25 cases incorrectly diagnosed antemortem were in individuals over 40 years of age. Retrospect in cases of this sort, however, often brings out clues which might have pointed suspicion in the proper direction, but which were overshadowed by more prominent features in the clinical development.

That our own assurance can mislead us when the diagnosis seems clear, and that unobtrusive but significant clinical features

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Read before the Section on Neurology and Psychiatry, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 11, 1947.

1. Hastings, D. W.: Difficulties in Differential Diagnosis of Brain Tumor in Older Age Groups, *J. Nerv. and Ment. Dis.* 89:44-51 (Jan.) 1939.

can slip by unnoticed are demonstrated in the following cases:

Case Reports

Case 1

A 43-year-old lawyer, previously asymptomatic, was having lunch in a restaurant seven weeks before admission to Duke Hospital, when he suddenly appeared dazed, complained of feeling sick, and rushed to a rest room. There he vomited on the floor and was found soon afterwards in a series of convulsions. Hospitalized promptly, he was found to have grossly bloody spinal fluid. Improvement was gradual through a prolonged delirium into consciousness marked by depression, anxiety, and occasional feelings of unreality. Intermittent retro-orbital and occipital headaches improved, but he occasionally noted a transitory, unexplained, and disagreeable odor. On the recommendation of a well-known psychiatrist, the patient was admitted to the neuropsychiatric service of Duke Hospital for treatment of "depression" following "brain hemorrhage."

Neurologic studies during the next four weeks showed little except anisocoria and an occasionally equivocal left plantar reflex. Examinations by an ophthalmologist on two occasions were normal. Electroencephalography demonstrated low amplitude waves with flattening in the right parieto-occipital region, thought to be "similar to records associated with vascular disorders, such as arterial aneurysm and/or thrombosis." Depressive symptoms improved with psychotherapy, but intermittent headaches, olfactory experiences, and feelings of unreality persisted. Arteriographic studies were planned in search of congenital intracranial aneurysm.

Suddenly, four weeks after admission, the patient complained of excruciating right occipital headache radiating into the neck, and lapsed into stupor. Pronounced meningismus appeared, together with left homonymous hemianopia and mild left hemiparesis. The spinal fluid, which was under normal pressure, contained 3 red cells and 3 mononuclear cells per cubic millimeter. Total proteins were 46 mg. per 100 cc. The findings at lumbar puncture three days later were essentially normal. After four days in a critical condition, the patient expired in a state of peripheral circulatory collapse and respiratory failure.

The final clinical diagnosis was: "Thrombosis of the right posterior cerebral artery associated with congenital aneurysm. History of subarachnoid hemorrhage. Death possibly associated with extension of thrombosis to basilar artery."

At autopsy, a large invasive tumor of the glioblastoma group was found deep in the right temporo-occipital lobe. Extensive necrosis, cystic degeneration, and hemorrhagic extravasation were evident.

Case 2

A 49-year-old housewife was brought to Duke Hospital in semicoma two weeks before death. Following three convulsions two months previously, she had lapsed into a stuporous state, complaining of soreness and aching in the back of the head and neck. Pneumoencephalograms performed within the next week were said to have been normal, but mental cloudiness continued, with deepening stupor one week prior to admission.

Neurologically, little was found except marked lethargy alternating with deep stupor, photophobia, generally hyperactive tendon reflexes, and equivocal plantar responses. At lumbar puncture, the spinal fluid was under slightly increased pressure and contained 19 mononuclear cells per cubic millimeter and 93 mg. of protein per 100 cc. A second puncture

three days later disclosed fluid under normal pressure but containing 322 red cells per cubic millimeter and showing a positive benzidine reaction after removal of sediment. Electroencephalography demonstrated enlarged, slow waves over all regions without evidence of localization. Pulmonary congestion appeared, together with terminal leukocytosis, and the patient died twelve days after hospitalization in a state of progressive circulatory collapse.

The final clinical diagnosis was: "Epidemic encephalitis. Questionable brain tumor."

At autopsy, a large cystic and necrotic glioblastoma multiforme was found invading the diencephalon and the entire left cerebral hemisphere. The tumor was in contact with the posterior horn of the left lateral ventricle, and in several places seemed to occur in isolated masses suggesting a metastatic distribution.

Our experience in case 1 was corroborated by another case wherein symptoms of cerebral and subarachnoid hemorrhage were associated with more definite evidence for brain tumor:

Case 3

A 58-year-old laborer, complaining of intermittent pain in the back of the head and neck for two months, rapidly developed right-sided weakness and inability to speak four months before admission to Duke Hospital. After gradual improvement for fourteen weeks, he suffered a sudden relapse marked by severe headache, right-sided paralysis, and irrational behavior. He grew steadily worse, vomited occasionally, and one week before hospitalization exhibited weakness in the left leg and incontinence.

On examination the patient was semi-comatose, with normal blood pressure, slightly elevated temperature, and bradycardia. The neck was stiff and painful on attempted antelexion. Neurologic study revealed bilateral papilledema, miotic pupils, and deviation of the eyes to the left. Other findings included spastic right hemiplegia, loss of pain reactions over the right side of the body, hyperactive tendon reflexes on the right, a grasp phenomenon in the left hand, and bilateral Babinski signs. The spinal fluid, which was under a pressure of 240 mm. of water, contained 21 red cells and 11 white cells (mostly mononuclear) per cubic millimeter, and total proteins of 286 mg. per 100 cc. The patient's condition was too critical for other studies. He lapsed into coma and died in general collapse on the fifth hospital day.

The final clinical diagnosis was "Brain tumor, possibly glioblastoma multiforme, with intracerebral hemorrhage and subarachnoid bleeding." Other diagnostic considerations included "cerebral and subarachnoid hemorrhage, possibly from intracranial aneurysm."

Autopsy demonstrated glioblastoma multiforme originating deep in the left cerebral hemisphere and extending by way of the centrum semiovale and corpus callosum into the right hemisphere. A tentorial pressure cone was associated with hemorrhagic infarction of both occipital lobes. Extensive tissue necrosis and subarachnoid hemorrhage were evident when the calvarium was opened.

Clinical and Pathologic Characteristics of Glioblastoma Multiforme

The clinical behavior of intracranial neoplasms of the glioblastoma group may vary

from highly characteristic to extremely perplexing, especially for those who must attempt differential diagnosis before neurosurgical assistance is available. Glioblastoma multiforme (spongioblastoma multiforme of Globus and Strauss), so called because of its pleomorphic histologic characteristics, appears customarily as a deep-seated cerebral tumor of late middle age, tending to invade extensively along fiber pathways such as the interlobar fasciculi and corpus callosum. (In childhood, it occurs rarely in the brain stem and cerebellum.)

It is composed of neuroglial elements, including spongioblasts, astroblasts, and abnormal astrocytes of all sorts. Numerous mitotic figures appear in the neuroglial cells, as well as in walls of blood vessels in areas of characteristic vascular proliferation. Patchy necrosis is common, with phagocytic response and glial replacement. Hemorrhagic extravasation into tumor substance occurs often; gross hemorrhage or cyst formation, less frequently. The invasive and destructive nature of the neoplasm frequently produces dramatic alterations in intracranial vascular dynamics (venous stasis, edema, arterial occlusion or rupture, internal hydrocephalus), so that the development of symptoms may be gradual or may be characterized by one or more apoplectic episodes simulating cerebrovascular disease. Glioblastomas and astrocytomas occur with approximately equal frequency and constitute about half of all tumors in the glioma series⁽²⁾.

Cerebral Hemorrhage Due to Brain Tumor

Descriptions of the syndrome of spontaneous subarachnoid hemorrhage due to brain tumor are rare. Russel and Kershman⁽³⁾ recorded 3 cases, in 2 of which occipital glioblastoma was found at autopsy following a clinical course not unlike that of our first case. They reviewed the literature prior to 1937, and found only one other reported instance⁽⁴⁾ of this syndrome associated with a gliomatous tumor. Little has appeared on the subject since this time, except for a report

by Porta⁽⁵⁾ on spongioblastoma with recurrent subarachnoid hemorrhage, and one by Beriel and Devic⁽⁶⁾, who discussed cases of brain tumor with the syndrome of meningeal hemorrhage.

References to symptoms suggesting subarachnoid bleeding in patients with angiomatous tumors are more frequent. Russel and Kershman concluded that brain tumor must be considered in the differential diagnosis of spontaneous subarachnoid hemorrhage, and indicated that a gradual onset of symptoms prior to ictus, and mental changes subsequently, should arouse additional suspicion. A mistaken diagnosis of intracranial aneurysm in such cases, however, could hardly be criticized. Furthermore, during the period of conservative management which follows intraventricular or subarachnoid hemorrhage in patients who survive⁽⁷⁾, opportunity for further clinical observation is granted.

Leakage of small amounts of blood into the subarachnoid space without aggravation of tumor symptoms apparently is not uncommon. Globus and Sapirstein⁽⁸⁾ reviewed 94 cases of brain tumor not subjected to surgical intervention, and demonstrated blood in the spinal fluid in 21 cases. They stated that this finding was not correlated with the type of tumor, with sudden aggravation of symptoms, or with evidence of gross hemorrhage into tumor. They pointed out that the seepage of blood was probably caused by alterations in the vessel walls and by the necrosis of tumor, both encouraging diapedesis or extravasation of blood elements into surrounding tissue. Gross hemorrhage into tumor was less frequent in their series⁽⁹⁾ and

2. Elvidge, A., Penfield, W. and Cone, W.: The Gliomas of the Central Nervous System; A Study of 219 Verified Cases. *A. Research Nerv. & Ment. Dis., Proc.*, (1935) 16; 107-181, 1937.
3. Russel, C. K. and Kershman, J.: Spontaneous Subarachnoid Hemorrhage and Brain Tumour. *Canad. M. A. J.* 36:568-577 (June) 1937.
4. Strauss, I., Globus, J. H. and Ginsburg, S. W.: Spontaneous Subarachnoid Hemorrhage; Its Relation to Aneurysms of Cerebral Blood Vessels. *Arch. Neurol. & Psychiat.* 27: 1080-1132 (May) 1932.

5. Porta, V.: Spongioblastoma cerebello-pontino con emorragia subaracnoidea spontanea recidivante. *Arch. ital. di chir.* 53:921-931, 1938.
6. Beriel and Devic, A.: Tumeurs cerebrales sous l'aspect clinique d'hémorragies méningées au cours d'une tumeur cérébrale. *Lyon med.* 161:47-48 (Jan. 9) 1938.
7. Hesser, F. H.: The Recognition and Management of Subarachnoid Hemorrhage. *North Carolina M. J.* 8:138-141 (March) 1947.
8. Globus, J. H. and Sapirstein, M.: Massive Hemorrhage into Brain Tumor; Its Significance and Probable Relationship to Rapidly Fatal Termination and Antecedent Trauma. *J.A.M.A.* 120:348-352 (Oct. 3) 1942.
9. Gross hemorrhage into tumor occurred in 9 of their 94 cases. One third of their cases were of the metastatic type. Spongioblastomas (glioblastomas) were next in frequency (24 cases); they accounted for gross hemorrhage in 4 of their 9 cases and shared equally with the metastatic variety as a cause for seepage of blood in 12 of the 21 cases in which subarachnoid bleeding occurred. This finding introduces the probability that metastatic tumor has to be given equal consideration with tumors of the glioblastoma group in the differential diagnosis of cerebrovascular disease.

was considered unlikely as a cause for sudden death.

Oldberg⁽¹⁰⁾ likewise found gross hemorrhage into tumor uncommon in gliomas, though more prevalent in the rapidly growing varieties (occurring in 5.6 per cent of glioblastomas in his study of 832 gliomas in Cushing's series). Hemorrhage into brain tumor was accompanied by appropriate clinical symptoms in only 0.84 per cent of his large series—a finding which emphasizes the fact that acute aggravation of the symptoms of brain tumor may develop without hemorrhage. Oldberg considered such sudden changes more often due to vascular occlusion with rapid necrosis of tissue, to acute edema in and around the glioma (especially if it is cystic), or to mechanical intracerebral alterations and the sudden production of internal hydrocephalus.

Review of Fifty Cases

In an effort to analyze the clinical characteristics of these tumors more critically, 50 cases, diagnosed "glioblastoma multiforme" by operative biopsy (40 cases) or at autopsy (10 cases), were reviewed from the standpoint of symptom development, neurologic manifestations, and preoperative study and diagnosis. These cases constituted 12.5 per cent of approximately 400 intracranial tumors of all types diagnosed at Duke Hospital in the six-year period from 1941 through 1946. Initial uncertainty in diagnosis is made evident by the fact that 27, or more than half, of the patients were admitted to the hospital on services other than neurosurgical. All but 3 of these ultimately were transferred to the neurosurgical service for final diagnosis and treatment under the supervision of Drs. Woodhall and Odom, to whom I am indebted for the privilege of using their case material.

The age of the patients in this series ranged from 13 to 68, averaging 48 years. Males (average age 49) were affected about twice as frequently as females (average age 47).

Symptoms

The duration of symptoms before hospitalization varied from one week to three years, averaging twenty-two weeks. The onset of

symptoms was insidious with gradual progression in 25 cases, rapid or apoplectic in 20, and gradual with sudden or episodic aggravation in 5. Intracranial vascular disease was suspected in about half the patients whose symptoms included sudden episodes.

Intermittent headaches, often accompanied by vomiting, were a prominent feature somewhere in the clinical course of all but two patients. The localization of the headache was chiefly frontal in about half the cases, and was divided equally between occipital and generalized in the remainder. Pain was lateralized in 10 cases and corresponded to the side of tumor location in 9 of these; otherwise, the distribution of headaches was of little or no localizing value.

Neurologic symptoms (unilateral weakness, aphasia, visual disturbance, olfactory hallucinations, jacksonian motor or sensory seizures) permitted some degree of anatomic localization in slightly more than half the group (56 per cent). Selective cerebral injury was suggested in another 16 per cent, but no localization whatsoever was possible in 28 per cent of the patients, in whom mental changes alone (irritable or irrational behavior, emotional flattening or depression, confusion, and gross sensorium defects) were evident. Some degree of mental aberration was frequent and was noted in all but 9 of the patients on first examination. Convulsions were absent in 27, or more than half the cases. They occurred as generalized tonic or tonic-clonic seizures in 11 cases and as focal seizures in 10 cases. Syncopal attacks alone appeared in 2 cases.

Signs

Neurologic signs of localizing value⁽¹¹⁾ were found in 37 cases, often as isolated manifestations such as homonymous hemianopia, unilateral lower facial weakness, or monoparesis. Signs were obscure in 10 cases, absent in 3. Palsies of the extraocular muscles associated with increased intracranial pressure were transitory and infrequent. Papilledema was absent in 8 cases, questionable or slight in 21, and moderate to severe in the remaining 21 cases. Unilateral predominance of papilledema was recorded in 15 cases. It provided no lateralizing information, being homolateral to tumor

11. Objective disturbances alone were considered, since many patients cooperated too poorly for sensory examination.

10. Oldberg, E.: Hemorrhage into Gliomas; a Review of 832 Consecutive Verified Cases of Glioma, Arch. Neurol. & Psychiat. 30:1061-1073 (Nov.) 1933.

location in 8 cases and contralateral in the rest. Meningismus, evidenced by painful rigidity on attempted passive anteflexion of the neck or by Kernig's sign, was pronounced in 8 cases and questionable or slight in 9 cases. It was absent in 33, or two thirds, of the patients, often in those showing marked neurologic dysfunction and papilledema.

Blood pressure was moderately elevated in 4 patients and definitely above normal in 2 others, with values as high as 200 systolic and 100 diastolic. Although symptoms might have been compatible with hypertensive encephalopathy in these individuals, brain tumor was suggested clinically and diagnosed neurosurgically in all after careful consideration of the history and clinical data.

Accessory clinical findings

Routine laboratory studies were not remarkable. Leukocytosis was present in 16 cases, the count ranging as high as 19,000 in one patient suspected of brain abscess. Serologic tests for syphilis were negative.

Preoperative lumbar puncture was performed in 21 patients. In 4 of these cases, the spinal fluid was examined shortly before admission to the hospital and was reported as being under "high pressure" in 3, all of whom exhibited marked papilledema at the initial examination, together with unquestionable signs of brain tumor. It is certain that lumbar puncture would have been avoided in these patients had the referring physicians been aware of the risks involved.

Reasonably complete studies on spinal fluid removed preoperatively during hospitalization were recorded in 15 cases (30 per cent), 12 of which were diagnostic problems with absent or questionable papilledema. In only one case were spinal fluid dynamics and constituency entirely normal, but the duration of symptoms in this instance was brief (two weeks). Initial pressures (with the patient in the lateral recumbent position) ranged from 120 to 520 mm. (average 247 mm.) of water. In one patient who was subjected to lumbar puncture on four occasions several days apart the pressure varied from 170 to 520 mm. of water⁽¹²⁾.

The cellular content of the fluid was nor-

mal in 3 cases; a mononuclear pleocytosis (from 6 to 325 cells per cubic millimeter) was present in 6 cases, and a polymorphonuclear reaction (8 and 26 cells per cubic millimeter) in 2 cases. No investigation of the spinal fluid sediment for tumor cells was performed, although this is diagnostic⁽³⁾ in some instances. The spinal fluid⁽¹³⁾ in 8 of the 15 cases contained red blood cells ranging from 6 to 322 per cubic millimeter. It seemed likely that bloody spinal fluid occurred with significantly greater frequency in this series than would be expected from traumatic "bloody tap" and was, in most cases, incident to vascular changes in the tumor itself. The site of bleeding into the subarachnoid space was found at autopsy in one case; tumor presented on the surface of the brain in 2 cases; and the spinal fluid contained 100 to 322 red cells per cubic millimeter in 3 other cases. No xanthochromia was reported. The spinal fluid in one case, however, contained 1 red cell per cubic millimeter but gave a 3-plus benzidine reaction, suggesting earlier subarachnoid bleeding. (Symptoms had developed precipitously one week prior to lumbar puncture, with occipital headache, nausea, vomiting, and stiff neck.) Meningismus was present in 5 of the patients, but bore no relation to the degree of pleocytosis or to the presence of red cells in the spinal fluid.

The total protein content of the fluids ranged from 22 to 380 mg. per 100 cc. (average 115 mg. per 100 cc.), and was increased above normal in all but 3 cases; no parallel with the duration of symptoms or with the clinical course was evident. Pandy's reaction was negative in one case in which the total proteins were as high as 93 mg. per 100 cc.; but in general it conformed with the total protein values, being positive with total proteins as low as 66 mg. per 100 cc. Serologic and mastic tests were normal throughout.

Differential diagnosis

A preoperative diagnosis of "brain tumor, probably glioblastoma multiforme" was possible in 27 cases (54 per cent) before ventriculography. Brain tumor of another type and location was suspected in 3 cases (mesencephalic in 1 case and pituitary in 2 cases because of erosion of the sella turcica incident to increased intracranial pressure). In 15 cases (30 per cent) diagnostic possibilities

12. Ford and Murphy⁽¹³⁾ have discussed this tendency of brain tumor to produce wide and rapid fluctuations of intracranial pressure.

13. Ford, F. R. and Murphy, E. L.: Increased Intracranial Pressure. A Clinical Analysis of the Causes and Characteristics of Several Types. Bull. Johns Hopkins Hosp. 61:369-398 (June) 1939.

other than brain tumor were under consideration singly or in combination as follows:

Intracranial vascular disease⁽¹⁴⁾ was considered in a total of 13 cases, including cerebral arteriosclerosis with thrombosis (7 cases), subdural hematoma (4 cases), hypertensive encephalopathy (3 cases), congenital aneurysm (3 cases), subarachnoid hemorrhage (2 cases), intracerebral hemorrhage (1 case) and intraventricular hemorrhage (1 case). Encephalitis was considered in 3 cases, brain abscess in 2 cases, and cerebral degenerative disease in 2 others. Drug intoxication (bromides) obscured diagnosis in 2 cases. Several remarkable impressions appeared in 5 cases, including idiopathic convulsive disorder, sinusitis, unilateral alcoholic neuritis, psychoneurosis and hysteria.

Some 18, or 36 per cent, of the cases could be considered difficult diagnostic problems because clinical signs generally were little suggestive of brain tumor. Three of these were not accepted as brain tumor suspects until electroencephalography and ventriculography proved them to be. The first 2 cases reported above were not diagnosed correctly until autopsy, though both had been studied with reasonable care from a neurosurgical as well as a neurologic point of view.

Special studies

Special study techniques of some sort, including x-rays of the skull and chest, electroencephalograms, and spinal or ventricular pneumoencephalography, were employed in all except one patient, who succumbed too quickly (case 3).

Stereoscopic x-rays of the skull in lateral and frontal views were made preoperatively in 47 patients and demonstrated changes of some sort in 13, all of whom exhibited papilledema. Pressure from the tumor had caused a calcified pineal gland to shift position laterally or downward in 8, or about one sixth of the cases. This observation was particularly helpful diagnostically in 2 of the more difficult problems. Separation of sutures was noted in 4 cases, enlargement of the sella turcica and erosion of the clinoid processes in 2, and convolutional thinning in one case. Age or duration of symptoms could not be

correlated with these findings, although the two youngest patients were included in the group. It is probable that tumor growth and cerebral damage were too rapid in most instances to produce pressure alterations in the skull. No evidence of tumor calcification was seen in any case.

Electroencephalography was of diagnostic and localizing value in 13, or about half, of the 28 cases in which it was done. Only 3 of these 13 cases, however, were among those in the group of 18 previously mentioned as "diagnostic problems." Brain tumor was suspected, but localization was erroneous in 7 of the 28 cases. "Paroxysmal cerebral dysrhythmia," suggesting idiopathic convulsive disorder, appeared in one case. In none of the cases, significantly, was the electroencephalogram considered "normal." It is of interest that the cerebral electroactivity in 3 of the 5 hypertensive patients was of the anoxic or dampened type over the affected area, such as is seen in cerebral infarction or subdural hematoma. Similar electroencephalographic changes were present in 3 other patients with normal blood pressure, indicating the predominantly vascular nature of the cerebral alteration produced by the tumor itself.

Pneumoencephalography, performed in all except the three cases presented above, gave confirmatory diagnostic information preoperatively in every instance. No attempt has been made to determine from the literature the frequency with which pneumoencephalography fails to give evidence of subsequently diagnosed glioblastoma, as in case 2. (Perhaps Dr. Odom, who has agreed to discuss the paper, can clarify this point and comment upon the operative and postoperative aspects of some of these cases.) Since the prognosis in glioblastoma multiforme is invariably poor, no attempt was made in many instances to prolong an already hopeless situation by radical and heroic tumor excision.

Subsequent course

The follow-up data available in most of the records were incomplete. Symptoms of recurrence had developed in 5 patients, who returned to the hospital four to ten months after the initial operation. One of these patients, with a two-month preoperative duration of symptoms, was operated upon three times in the next twenty-two months, mak-

14. Approximately 112 cases of intracranial vascular disorders of all varieties were diagnosed in Duke Hospital during the year 1946. Since our series covered a six-year period, the frequency of glioblastoma multiforme as the inciting cause for symptoms of intracranial vascular disease would have been about once in 53 cases.

ing a satisfactory response each time. In the 10 cases which came to autopsy, the duration of life from onset of symptoms averaged four months, ranging from one and a half to nine and a half months.

Factors in the Diagnosis of Glioblastoma Multiforme

Certain pitfalls in the differential diagnosis of malignant brain tumor from other varieties of intracranial diseases are evident from the foregoing data. These include: (1) age and the presence of arteriosclerosis and/or hypertension; (2) ictus suggesting cerebrovascular disease; (3) lack of localizing symptoms or signs; (4) temporary clinical improvement; (5) normal eyegrounds; (6) mental symptoms alone suggesting toxic, inflammatory, or degenerative cerebral disorder, and (7) overemphasis upon historic or other data to the exclusion of subsequent clinical developments—for example, previously “normal” pneumoencephalograms or a history of subarachnoid hemorrhage suggesting intracranial aneurysm.

Pertinent clinical features favoring a diagnosis of glioblastoma multiforme in our series were as follows: (1) illness beginning in the second three decades of life; (2) symptoms of short duration (twenty-two weeks), with episodic aggravation, in half the cases; (3) headache with vomiting in most instances; (4) mental disturbance in most cases, often rapid and early in appearance and later accompanied by neurologic symptoms in half the cases; (5) convulsions or syncope in about half the patients; (6) objective neurologic signs, ultimately, in about three fourths of the cases; (7) definite alterations in the cerebrospinal dynamics and constituency (pleocytosis, seepage of blood, increased protein content); (8) consistently abnormal electroencephalogram; and (9) not infrequent skull changes demonstrable by x-ray.

When confusion with intracranial vascular disease existed, suspicion of brain tumor was often aroused by the comparatively brief duration of symptoms and by the rapid appearance, persistence, and steady progression of mental change, sometimes episodic or suddenly illuminated by the appearance of neurologic symptoms and signs suggesting, but not clearly identified with, one of the recognizable cerebrovascular syndromes. In most

cases of cerebrovascular disease, the clinical course is more protracted; the intellectual deficit is early, gradual, and characteristic—sometimes with pathologic emotionality—and the neurologic alterations are better defined as cerebral artery syndromes. Furthermore, convulsions are less apt to occur, and electroencephalograms and studies of the spinal fluid in many cases may be normal.

Finally, if any doubt in diagnosis exists, it is better to err in the direction of looking for brain tumor than to consider sparing the patient the risk of pneumoencephalography. Contraindications to this procedure are few; opinion has been expressed that the demyelinating encephalomyelopathies, such as Schilder's disease, may be aggravated thereby. Oldberg's investigations on glioma, however, have shown that even decompression and diagnostic tap are entirely justified when intracerebral hemorrhage and tumor are confused clinically⁽¹⁰⁾. Horrax⁽¹⁵⁾, furthermore, cited 3 cases, clinically typical of cerebrovascular accident, which proved to be operable brain tumors following ventriculography. Certainly, there is no reason to disagree with Wilson⁽¹⁶⁾ that brain tumor should always be suspected in any case of paralysis of cerebral type, even if the background and clinical findings suggest vascular disease.

Discussion

Dr. Guy L. Odom (Durham): The diagnosis of a brain tumor in the age group in which glioblastomas occur is a particularly important problem and, at times, an extremely difficult one. They occur in the so-called ‘cancer age,’ the older age group, in which also occur the vascular lesions which so commonly involve the brain. You may ask what difference it makes whether a patient has a vascular lesion or a malignant glioma. It makes a great deal of difference in some respects, especially from the standpoint of prognosis. At times malignant gliomas are located in parts of the brain which can be removed, thus affording the patient a year or several years of happy existence. Then, there are the benign tumors, which may be present for a number of years before they suddenly produce symptoms. The patient becomes comatose, or rapidly develops paralysis on one side or the other, and is thought to have a malignant tumor; operation, however, will show a benign meningioma, removal of which will permit the patient to live out his normal life expectancy. The reason for the sudden development of symptoms in these cases is that the brain can adjust itself very well to slowly increasing intracranial pressure or to a slowly growing mass, until there is an obstruction in the ventricular system. Such obstruction produces a very sudden change in

15. Horrax, G.: The Importance of Cerebral Air Studies in the Differentiation of Brain Tumor from Intracranial Vascular Disease, *S. Clin. North America* 16:1633-1662 (Dec.) 1936.
16. Wilson, R. B.: Multiple Gliomas of Brain Simulating Vascular Disease, *J. M. A. Georgia* 26:464-467 (Sept.) 1937.

the patient's condition and frequently makes one think of the possibility of a rapidly growing tumor.

I feel that every patient in whom there is any doubt about brain tumor should have the benefit of either a ventriculogram or a pneumoencephalogram. Frequently such studies will reveal a brain tumor in patients who have no complaints other than slight mental confusion or memory defect, no positive neurologic findings, normal x-rays of the skull, and normal pressure on lumbar puncture. One rule that can be definitely laid down is that any patient having convulsive seizures starting late in life should always have a pneumoencephalogram performed, even if the neurologic examination is negative.

A point I would like to bring up is the question of subarachnoid bleeding in cases of malignant gliomas. I wonder whether the first case Dr. Hesser reported really had a subarachnoid hemorrhage. Apparently the diagnosis is based on the fact that the patient had bloody spinal fluid when he was admitted to another hospital. If this is going to be published as a case of glioblastoma with subarachnoid hemorrhage, it would be wise to check back into the records and see whether the symptoms, clinical course, and subsequent lumbar punctures (if any were made) confirm the diagnosis.

Dr. Hesser: Two lumbar punctures were done and both confirmed the presence of subarachnoid hemorrhage.

Dr. Odom: I have always felt that subarachnoid hemorrhage is not as common with malignant tumors as some people feel. Vascular change is one of the characteristic findings of glioblastoma multiforme, and accounts for the sudden change in the patient's neurologic status; but actual, frank hemorrhage into the subarachnoid space in these cases is an extremely rare occurrence.

Dr. Graves: I would like to make a very short comment about one of the discussant's remarks—that is, in regard to convulsions starting late in life. I think that idiopathic epilepsy can begin at any age, although it is true that it usually begins earlier in life and the brain tumors usually start later. When a patient develops seizures after the age of 30, they are more apt to be due to brain tumors than to epilepsy; but I am quite sure that idiopathic epilepsy may occur at any age.

Dr. Odom: I did not want to leave the impression that all convulsive seizures occurring after 30 years of age are due to brain tumors. However, if a patient begins to have attacks after 30 and does not have a pneumoencephalogram, he has been mishandled. Every now and then a patient who has been having convulsive seizures for several years is admitted to the hospital comatose as an emergency. This past week we operated upon a patient who had had convulsive seizures for two and a half years. He was admitted to the hospital last week with marked papilledema and almost complete paralysis of the left side of the body. An extremely large tumor in the right temporal lobe was resected. If that patient had been admitted to the hospital two years ago or a year ago, and had had an encephalogram made, his postoperative course would not have been as critical. When the brain can no longer compensate for the increased intracranial pressure, and when changes occur in the midbrain, the operative prognosis is extremely poor.

Dr. Hesser: I thank Drs. Odom and Graves for their comments.

I would like to emphasize the point that patients with brain tumors are sometimes treated for long periods of time as cases of simple headache problem, or sinusitis. If the practitioner would examine the eyegrounds periodically in these cases, he would sometimes be able to make an earlier diagnosis.

PRIMARY CANCER OF THE LUNG

HOWARD H. BRADSHAW, M.D.

WINSTON-SALEM

The lung is the second or third most common site of primary cancer in man. Carcinoma of the lung is less common than cancer of the stomach, and, in some clinics, less common than cancer of the large bowel; in others, it occurs more frequently than carcinoma of the large bowel. For several years campaigns have been conducted to make the public and the profession familiar with the early symptoms of cancer. In the case of cancer of the lung the publicity has failed of its purpose. During the last fifteen years there has been only a slight decrease (from 9.9 months to 9 months) in the average interval between the onset of symptoms and hospital admission in more than 300 cases which I have reviewed.

It is debatable whether or not there has been an actual increase in cancer of the lung. It is universally agreed that more cases are being seen clinically and at autopsy. An increasing ratio of lung cancers to all other cancers has been reported by several observers. It is probable, however, that the increase is more apparent than real, and might well be explained on the basis of increased longevity, better diagnostic methods, greater familiarity of the pathologist with the lesion, and the classification as primary of tumors which formerly were believed to be metastatic or secondary.

Etiologic Factors

It should not be necessary to state that the cause of this type of cancer, as of all others, is unknown. Unfortunately, however, reports are appearing almost daily in the newspapers about the discovery of a cause or a cure for cancer. Millions of dollars are being spent for research on this subject, and we can hope for more information in the future.

Lung cancer occurs predominantly in patients over 40, but is occasionally seen in teen-age youngsters. For some unknown reason males are afflicted five or six times as frequently as females. This fact has been used by some as an argument that smoking has an irritating effect which is a factor in

the production of lung cancer. Such reasoning has no foundation on either experimental or clinical evidence. The incidence of cancer in patients with truly irritating diseases of the bronchial tubes, such as bronchiectasis, has never been shown to be greater than in normal individuals. Many patients, both male and female, who have lung cancers have never smoked.

Symptoms

The first and most common symptom of cancer of the lung is an unexplained and persistent cough. The prompt and thorough investigation of such coughs would do more to ensure early diagnosis and prompt treatment than any other measure or measures now available. Many patients state that they "caught a cold" and that the resulting cough has persisted. It is expensive and time consuming to study all such patients properly; yet that is the only way that early diagnosis can be made in most cases. It is impossible to make any statement that would apply to all patients, but it seems wise to become suspicious of the possibility of cancer in any patient over 30 years of age who has previously been in good health, and who has a cough which persists more than three or four weeks.

Other symptoms are far less frequent, especially early in the course of the disease. The most common are hemoptysis, chest pain, and dyspnea, in that order of frequency. The average concept of lung cancer—which, unfortunately, has been reprinted from textbook to textbook—is that of far advanced, hopeless cancer. Cases presenting the picture of anemia, weight loss, profuse sputum, massive hemorrhages, chest pain, and neurologic or skeletal evidence of metastasis are hopeless, and the only reason for confirming the diagnosis is to satisfy one's curiosity. Nothing in the way of curative therapy can be sensibly considered.

Diagnosis

In recent years, mass roentgenologic surveys are revealing more and more unsuspected and silent shadows in the lung fields. If such abnormalities are properly evaluated and repeated examinations done, more early cancers will be found. The attitude taken by some, of "waiting to see what will happen," may lose for the patient his only chance of a cure. One is perhaps justified in

waiting three or four weeks before definitive action is taken. If the shadow does not regress after a short period of observation, however, and if other diagnostic procedures have been exhausted, then exploratory thoracotomy is justified. It is the silent, accidentally discovered cancer that is usually the most amenable to treatment.

The only effective diagnostic measures are roentgenography, bronchoscopy, and the microscopic examination of stained bronchial secretions; finally, exploratory thoracotomy may be necessary. Such an operation should become less and less frequent, just as exploratory laparotomy has. Both performances are confessions of ignorance and are often not very gratifying to either the patient or the doctor. The value of the other diagnostic procedures is in direct proportion to the ability of the individual performing them.

Roentgenography

The interpretation of x-ray films of the lung when cancer is present is not an easy matter. The position of the cancer may greatly alter the picture. Malignant pulmonary lesions vary from a small growth in a major bronchus which presents no abnormality to a large, thick-walled cavity replacing the greater part of a lobe and containing a fluid level. A cancer beneath the visceral pleura may give rise to pleural fluid which prevents the tumor from being visualized on the film. Atelectasis, bronchiectasis, and obstructive emphysema may all result from cancer. Rib erosion with symptoms related to the brachial plexus and sympathetic system, circumscribed hilar shadows, and paradoxical diaphragmatic action resulting from phrenic nerve paralysis, may all be produced by lung cancer. A cancer located in the mediastinal aspect of the left lower lobe may be entirely obscured by the heart shadow if only a conventional posterior-anterior view is taken. Lateral and oblique views may be necessary to visualize it.

Bronchoscopy

The bronchoscope should be considered as an adjunct to roentgenography rather than a substitute for it. It should be recalled that the bronchoscope is too large to enter the medium and finer subdivisions of the bronchial tree, where the x-ray film is most valuable. Exact diagnosis, of course, is possible only when the bronchoscopist can secure a

piece of the tumor for microscopic examination. Since the majority of lung cancers are bronchogenic and are located in fairly large bronchi, most of them—45 to 78 per cent—can be diagnosed accurately

Whether or not tissue is removed, the expert performance of bronchoscopy often yields useful information which demands continued efforts at diagnosis. Tracheal or bronchial fixation, widening of the carina, or pus or blood visualized beyond the tip of the bronchoscope is strongly suggestive of cancer, even in the presence of a negative x-ray film. Finally, if the cancer is visualized, its exact position—a knowledge of which may be all important if removal is contemplated—can best be determined by the bronchoscopist.

The Papanicolaou technique

For many years efforts have been made to diagnose lung cancer by the microscopic examination of stained smears of sputum or pleural fluid. English workers have been especially diligent. The results of such examinations have been discouraging, and in most clinics they have been abandoned. Interest in examining bronchial secretions or washings obtained through the bronchoscope has recently been revived by the work of Papanicolaou. The finding of cancer cells in the vaginal or cervical secretions has aided in the earlier diagnosis of cancer of the uterine cervix or body. The same staining technique or another employing hematoxylin and eosin has been applied to bronchial secretions with apparently increasing success.

As with the vaginal smears, false positive or false negative results have been obtained in a small percentage of the examinations. Most pathologists prefer more tissue for examination than is usually available in the secretions. They prefer to see the relationship of the abnormal to the normal. It seems, however, that a high degree of success is possible if the material is properly prepared and is painstakingly examined by a trained cytologist. The tumor beyond the tip of the bronchoscope may best be diagnosed by this means. On the other hand, certain cancers may remain in the submucosal layer of the bronchus and not "shed" cancer cells into the bronchial lumen until the growth has reached considerable size.

Exploratory thoracotomy

All too frequently diagnostic measures fail to give an answer and exploratory thoracotomy becomes necessary. Even with the chest open, it is often difficult to get a piece of tissue for frozen section. The bronchus may have to be opened or considerable normal lung traversed, with attendant troublesome bleeding, before an adequate specimen of tissue is obtained. If obliterative pleuritis is added to the other difficulties, it can be readily appreciated why exploratory thoracotomy should be used only as a last resort.

Other diagnostic measures are occasionally used, but usually are positive only in inoperable cancer. The removal of a metastatic nodule from a distant site or the direct aspiration of cancer cells from an intrathoracic mass may give the correct diagnosis, but is rarely of any additional value.

Treatment

It was not until 1933 that the first successful therapy was applied to lung cancer. The therapeutic procedures that have been tried most often are the roentgen ray, direct application of radium to accessible lesions, and surgical removal.

Roentgen therapy

Roentgen therapy has been used in more patients than all the other methods combined. No cure has ever been reported, even though massive doses have been used—in some cases, with the chest open and the tumor exposed. It is true that temporary improvement may follow roentgen therapy. Apparently bronchial obstruction may be partially overcome and bronchial drainage promoted. Thus an occasional patient will gain weight, his cough will be less disturbing, and the appearance of his chest film will improve. These changes are all fleeting, and the condition progresses to its inevitable end. In a series of patients treated by x-ray the survival time was only three to four months longer than in a series of untreated patients.

Endobronchial radium

Endobronchial radium application was given a thorough trial, especially in England. An apparatus was devised whereby radium could be held in place against the cancer in the bronchial wall without producing bronchial obstruction. This method allowed for the maximum, direct radiation.

Temporary improvement followed, but the cancer eventually proved fatal.

Pneumonectomy

Occasional attempts to remove totally the lung which was the site of cancer were all unsuccessful until 1933. In that year the first successful operation was performed on a physician, who, as late as May, 1947, appeared to be in good health and was conducting a busy practice. The operation is now being done by more and more surgeons. The mortality rate as well as the cure rate is improving, because of better anesthetic methods, the use of blood and blood substitutes, the availability of agents to combat infection, and—last, but not least—added experience and knowledge in maintaining relatively normal respiration during and after the operation. It can now be said that approximately 7 per cent of patients operated upon for lung cancer can be cured. That statement does not mean that 7 per cent of all patients who have lung cancer can be cured, because many of them are quite obviously beyond help when they are admitted to the hospital. Not all of those who are cured are able to carry on their occupation; an occasional patient becomes so short of breath that his activities are greatly restricted. Fortunately, however, the majority of them can engage in a gainful occupation.

Occasionally a palliative lobectomy or pneumonectomy is justified in a patient who is having recurring massive hemoptyses, or a persistent racking cough which prevents him from eating and sleeping. In such cases the operation merely makes the few remaining weeks or months of life less horrible.

Summary

1. Cancer of the lung is the second or third most common malignancy occurring in man, and the incidence appears to be increasing.

2. The most common early symptom is a persistent cough; any cough of more than three or four weeks' duration deserves a thorough investigation.

3. If the diagnosis cannot be made by roentgen and bronchoscopic studies, exploratory thoracotomy is justified.

4. The only hope of cure is afforded by pneumonectomy. The present rate of cure in patients on whom this operation is performed is approximately 7 per cent.

BETTER HEALTH—TODAY AND TOMORROW—THROUGH MEDICINE

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DURHAM

The two following statements are frequently quoted: (1) The United States has the best medical care in the world, and (2) the rejection of 37.6 per cent of the Selective Service registrants indicates that our medical care is not what it should be. The conclusion to be drawn from these conflicting statements is that, regardless of how good our health standards may be, better medical care can and must be provided.

Factors in the Provision of Better Health

Six factors are involved in improving the health of our nation: (1) education of the public to seek good medical care, (2) location of physicians and hospitals, (3) distribution of the costs of medical service, (4) treatment of disease, (5) prevention of disease, and (6) research to discover better means for the treatment and prevention of disease.

Education of the public

This meeting is an effort by the North Carolina Hospital Association and the medical profession to acquaint the public with the necessity for good medical care. More and better medical and hospital facilities are needed, but it is equally important that the public be educated to seek and to utilize the present facilities and those to be created under the Good Health Program. Many people, especially among the poorer classes, do not realize that better medical care is necessary and do not know enough about available medical facilities. Inadequate medical care often is due to this factor of ignorance. A public awareness of the necessity for preventive, diagnostic, and therapeutic measures will enable the physicians, hospitals, and health departments of North Carolina to provide these measures, regardless of the poverty of the patient.

Syndicated medical articles in the newspapers have made remarkable progress in educating the public, but obviously they do

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not reach those who do not read the newspapers. School, radio, and billboard programs also are needed. If, through advertising, a public demand can be created for automobiles, electric refrigerators, certain brands of cigarettes, and patent and home medicines (which represent 14 per cent of the present medical costs), the people can be taught, by the same means, to seek adequate medical service. The law of supply and demand is still in operation. The public gets the product it demands, whether it be medical care or a nationally advertised variety of tooth paste. In many communities, however, such a demand must be created. The American Medical Association, the American Academy of Pediatrics, and county, state and federal health services might employ publicity experts to conduct advertising campaigns on the necessity for adequate medical care and on the medical facilities available. Dr. I. G. Greer has shown that adequate medical care is effective; only 1.4 per cent of those men who grew up in North Carolina orphanages were rejected by Selective Service, in contrast to 44.6 per cent for the state as a whole.

Distribution of medical services

There is a dearth of general practitioners, especially in rural areas, and efforts are being made by the North Carolina Medical Care Commission, the Good Health Association, the North Carolina Hospital Association, the Duke Endowment, and the medical schools to remedy maldistribution of medical services. Hospitals and physicians go together; neither can be separated from the other. The present program consists in building more rural hospitals and health centers, recruiting more keen rural medical students, and providing loan funds for a part of their education.

Distribution of the costs of medical care

Another great difficulty in the present situation is the uneven distribution of the costs of medical care. The public and the medical profession should eventually benefit from the gradual development of methods by which adequate medical services can be made available to all of the people, regardless of their ability to pay. The Medical Society of the State of North Carolina and the North Carolina Hospital Association are studying methods to implement this pro-

gram. The Hospital Care Association and the Hospital Saving Association have provided voluntary medical and hospital prepayment plans, and the Duke Endowment, the state, and the counties pay part of the costs of hospitalization for the indigent.

Treatment of disease

Most people—and, I am sorry to say, many medical students and physicians—regard the treatment of disease as the most important factor in the improvement of health. I rarely see a child who is not receiving one of the new sulfonamide drugs, penicillin, or streptomycin. Frequently little or no previous effort has been made to discover the cause of the disease. It is now a common practice to give sulfonamides routinely for two days. If no improvement follows, penicillin is given. After two more unsuccessful days, the drug is changed to streptomycin. If the patient is not cured by the sixth day, he may be examined to determine the cause of his symptoms. I must admit that most patients recover with this type of blind treatment, but we should not practice medicine without first trying to find out what we are doing, or to diagnose the type of disease with which we are dealing.

Prevention of disease

Preventive medicine must also be increasingly taught and practiced. Whether the cost is borne by taxation, private fees, or local charity, prevention is the most important phase of medicine and should be carried out by private physicians as well as by health departments. "He who cures a disease may be the most skillful, but he who prevents it is the safest physician." Three fourths of the 250,000 deaths of American children which occur annually can and should be prevented. Twenty-one per cent of these deaths are due to curable diseases, while 56 per cent are caused by preventable conditions. Much has been accomplished in this field, and during the past fifty years the infant mortality rate in North Carolina, for example, has fallen from approximately 100 per 1,000 live births to 37.

The need for better prenatal, obstetric, and neonatal care is emphasized by the fact that more than half the deaths in this country among children under the age of 1 year occur during the first month of life. Improved maternity care and the hospitalization of mothers who need it can and must be

supplied through the cooperation of general practitioners, obstetricians, pediatricians, health officers, nurses, and hospitals. That such joint effort is efficacious has been demonstrated in Denver, where the number of infant deaths was reduced by better maternal and infant care from 178 per 1,000 live births to 15.

Immunization against smallpox, whooping cough, diphtheria, tetanus, typhoid and paratyphoid fevers will eradicate those diseases. From 1930 to 1938 diphtheria was responsible for 7 per cent of the admissions to the pediatric service of Duke Hospital. Since the state compulsory immunization law was passed, diphtheria is a rarity, though it is still a menace.

Rabies, malaria, poisoning, and automobile accidents can be reduced by proper precautions and the instruction of children. Cases of poisoning, especially those due to swallowing lye, are still too frequent. Adequate infant feeding and well balanced diets are necessary. As a result of the wider use of lactic acid milk and the sulfonamide drugs, summer diarrhea, especially dysentery, is disappearing. Last, but not least, mental hygiene is one of the most important phases of preventive medicine. Although not a large factor in mortality, mental health problems, because of the lives they wreck, often are as serious as those of physical health.

Research

Better health cannot be created without an alert medical profession. Better means for the treatment and prevention of disease must constantly be sought. Medical progress is possible only if every idea is first tried and tested by animal experiments to make sure that it is not harmful and involves no risk. Sound ideas are soon accepted and others rejected. The rapid acceptance of sulfonamides, penicillin, and streptomycin is proof that most medical men recognize excellence very quickly.

The medical research carried on during the war by the investigators of the National Research Council, the Committee on Medical Research, and the Office of Scientific Research and Development did as much to improve the nation's health as the atomic bomb did to end the war. Blood plasma, insect repellants, insecticides (DDT and others), chemotherapeutic agents, typhus and yellow

fever vaccines, and new methods of treating burns, malaria (chloroquine), poisoning (BAL), tetanus, and tropical diseases are only a few of the developments that not only saved thousands of lives and prevented untold illness during the war, but will continue to provide better health for all of us.

Conclusion

Better health can and must be provided by: (1) education of the public to seek good medical care, (2) a better distribution of physicians, hospitals, and the cost of medical care, and (3) research to discover better means for the treatment and prevention of disease.

X-RAY EXAMINATION IN RUPTURE OF THE SPLEEN

C. L. GRAY, M.D. *

HIGH POINT

With the ever increasing incidence of highway and industrial accidents, the radiologist is being called upon more and more often to aid in the early diagnosis of acute traumatic disorders. In instances of abdominal trauma it is not always evident from the initial observations of the patient whether one is dealing with a severe intra-abdominal catastrophe or whether one can, with any degree of safety, observe the patient for a few hours while awaiting the development of signs pointing to injury of a hollow or solid viscus. Since so many possibilities in the differential diagnosis arise, one welcomes some means of aid in making a diagnosis, whether it be of a positive or negative nature.

The roentgenologist can be of great help to the surgeon or internist in diagnosing the presence of splenic rupture. No complicated or elaborate technical procedure or apparatus is necessary. A plain survey film of the abdomen, made with the patient in a level supine position, is all that is required. It is true, however, that the majority of these patients, when they are first seen in the hospital, are in varying degrees of shock, and may be poor candidates for x-ray examination.

Clinical Symptoms

The symptoms of a lacerated spleen are

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Fig. 1 (Case 1). Note the serrated greater curvature of the stomach, with padding and prominence of the gastric rugae. Two lacerations in the spleen were found at operation.



Fig. 2 (Case 2). The degree of dilatation of the stomach is fairly characteristic of splenic rupture. The upper third of the greater curvature is irregular in contour. A laceration of the spleen on its convex surface was found at operation.

those of intra-abdominal hemorrhage. Diaphragmatic irritation may cause the pain to radiate to the left scapula or shoulder. There may be a tender, ill-defined mass, rigidity of muscles, shifting dullness, and shock. Hemorrhage may be massive enough to result in early death, or it may be progressive, allowing the patient to walk perhaps half a mile, but producing exsanguination within twenty-four to forty-eight hours. Hemorrhage may also be of the delayed type characterized by repeated episodes of bleeding, usually accompanied by violent pain on exertion, at intervals of several days.

Roentgenologic Findings

In practically all normal persons, a plain film of the abdomen, if gas is present in the stomach, will show the normal gastric contour. In lacerations of the spleen there is obliteration of the splenic shadow, which may be due either to intracapsular splenic bleeding or to perisplenic hematoma. In addition, blood gravitates down the gastrosplenic ligament and infiltrates along the gastric wall, producing a jagged, serrated, saw-toothed appearance of the greater curv-

ature of the stomach. The gastric deformity and extent of serration seem to be almost directly proportionate to the degree of hemorrhage.

Reflex gastric dilatation is usually associated with rupture of the spleen. The finding of a dilated stomach in addition to serration of the greater curvature is doubly significant. Occasionally the perisplenic bleeding results in tenting of the left leaflet of the diaphragm. This sign, when present, is another valuable diagnostic aid.

Case Reports

Case 1

A 17-year-old white boy injured in a train-automobile accident was brought into the hospital in a profound state of shock. Examination revealed multiple rib fractures on the right side, with collapse of the right lung and extensive emphysema of the soft tissues. Transfusions of whole blood and plasma were given, and he reacted from the shock. Further examination made it obvious that he was also suffering from some intra-abdominal injury. As the right side of the body seemed to have borne the brunt of the injury, it was natural to suspect a rupture of the liver, and this was the attending surgeon's impression.

A plain film of the abdomen (fig. 1) disclosed findings suggestive of splenic rupture, and the

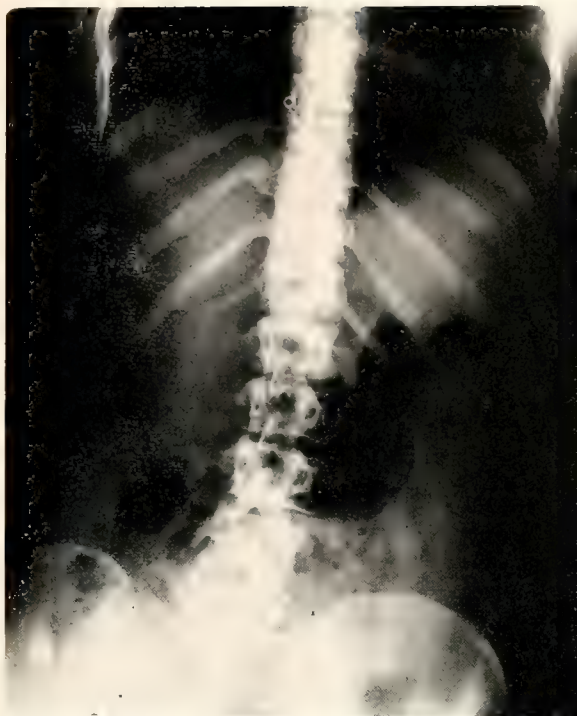


Fig. 3 (Case 3). The increased space between the gas-filled cardia and the left leaflet of the diaphragm is suggestive of fluid or blood within this space. This picture was thought to represent laceration of the spleen, but operation disclosed a tremendous rupture of the liver, with almost total detachment.

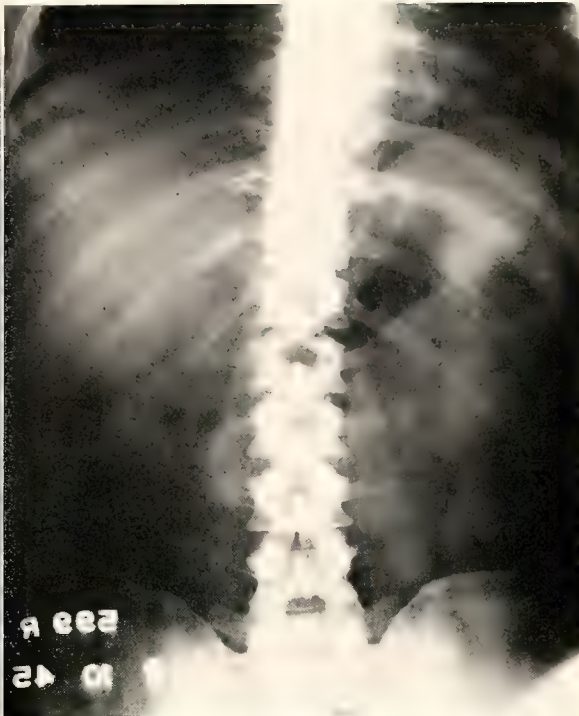


Fig. 4 (Case 4). The increased space between the leaflet of the diaphragm and the fundus of the stomach led to a mistaken diagnosis of splenic rupture. At operation the spleen was found to be normal. Note the fracture through the left tenth rib.

surgeon was influenced to make a high left rectus incision. Upon entering the peritoneal space, he encountered several hundred cubic centimeters of semi-clotted and fresh blood. Further exploration following aspiration disclosed a 2-inch laceration in the splenic hilum and another 1-inch tear in the adjacent lower pole. The blood had acted as a tamponade, and after aspiration bleeding became more profuse. Splenectomy was performed, and after a stormy postoperative course the patient recovered and is back at work today.

Case 2

A 22-year-old white man was brought into the hospital about seven hours after being injured in a motorcycle-automobile accident. Moderate shock was present, and there was marked abdominal muscle splinting. Attempted changes of position caused intense pain in the abdomen and left shoulder. A large contusion was noted in the left costovertebral area.

A chest x-ray showed no rib fractures or free air beneath the domes of the diaphragms, and no tenting of the diaphragm. A plain film of the abdomen (fig. 2) disclosed two avulsed lumbar transverse processes. The stomach was markedly dilated and gas filled, but showed no unusual displacement of the shadow. On the greater curvature was noted some jagged serration of the gastric wall. There was some padding of the visible rugal markings on the posterior wall of the gas-filled stomach.

These findings were reported to the surgeon, and a tentative roentgenologic diagnosis of splenic rupture was made. Exploration was carried out through a high left rectus incision, and about 800 cc. of

dark blood was encountered. An irregular rent about 1 inch in length was found on the convex surface of the spleen. Splenectomy was performed without difficulty. Exploration of the other organs disclosed no other gross injury.

The patient's convalescence was complicated by a right subdiaphragmatic abscess, but he was discharged after several weeks, and has remained well since.

Case 3

A white woman, 35 years of age, was brought to the hospital in moderately severe shock following an automobile accident. She had received a terrific blow over the right upper abdominal quadrant from the steering wheel of the car she was driving. She complained of exquisite abdominal pain, and it was evident from physical examination that she had suffered some intra-abdominal injury. She had a board-like abdomen, with distention and signs of peritoneal irritation. She was treated for shock and observed for seven hours before an x-ray examination was ordered.

A plain film of the abdomen (fig. 3) showed considerable gaseous dilatation of the stomach, downward displacement of the stomach, and a serrated greater curvature. It was also noted that the liver shadow was displaced downward. The roentgen diagnosis was probable splenic rupture, with extensive perisplenic hemorrhage.

At exploratory operation approximately 1 liter of blood was found in the free peritoneal space. Fully half of the hemorrhage was diffused along the gastrosplenic ligament and enveloped the convexity of the stomach. After aspiration of the blood it was found that the spleen was not lacerated, but that

there was a tremendous tear in the posterior surface of the liver, with almost complete detachment. Attempts to suture the freely bleeding rupture were unsatisfactory. Finally, with the help of muscle implants, bleeding was controlled sufficiently to permit closure of the abdomen. The patient expired twenty-four hours later, however, despite the usual supportive measures.

As this case shows, bleeding from hepatic lacerations, if of sufficient magnitude, may well produce the x-ray findings characteristic of splenic rupture.

Case 4

While intoxicated, a 54-year-old white man fell on a stairway, striking the left lower posterior thorax. When first seen he was not in shock, and despite his self-induced analgesia, he continued to complain primarily of pain in the left upper anterior portion of the abdomen. This pain was occasionally severe in the left shoulder, and deep breathing was difficult.

A chest x-ray showed two non-depressed rib fractures in the lower left thorax posteriorly. A plain film of the abdomen (fig. 4) showed only a slight amount of gas in the stomach, but the gas bubble seemed to be well separated from the diaphragm, and from the splenic area. There was little or no serration of the greater curvature.

While these x-ray findings were not typical of a ruptured spleen, the man's clinical condition seemed to point more and more to an intra-abdominal injury of some type. He had a board-like abdomen, intense pain, excessive thirst, and apparently progressive shock. After about five hours of observation, his symptoms became exaggerated, and the attending surgeon performed an exploratory laparotomy. No intraperitoneal bleeding or rupture could be identified.

Twenty-four hours postoperatively a massive ecchymosis appeared over the entire left side of the thorax, having resulted from deep bleeding of the injured intercostal vessels at the sites of rib fracture.

Case 5

A 33-year-old white man pushed over a six-inch tree with a bulldozer. As the tree fell, he threw up his left arm to protect himself, and the tree pushed his arm and elbow into the left side of the lower thorax and upper abdomen, pinning him to his seat. He was able to free himself, and walked unassisted two or three hundred yards in order to summon help. He complained of pain in the left upper quadrant, together with weakness, nausea, and vomiting. It was some three or four hours before he was brought to the hospital, and on one occasion during this interval he voided grossly bloody urine.

Upon admission to the accident room of the hospital, he was noted to be in a condition of moderate shock. There was no abdominal distention and little or no splinting of the abdominal muscles. The most striking observation was the fact that the patient was unable to lie down and preferred to sit bolt upright with both thighs flexed. A moderate amount of pain was produced on deep pressure into the left upper quadrant. The white blood cell count on admission was 19,000. Examination of the urine showed gross blood in a voided specimen.

A survey roentgenogram of the abdomen was taken (fig. 5), and moderate gaseous dilatation of the stomach was observed, together with increase in the space between the fundus and the left concavity of the diaphragm. There was some serration of the greater curvature of the stomach, and slight displacement of the stomach shadow to the right.



Fig. 5 (Case 5). This film shows all the findings helpful in the diagnosis of splenic laceration: increased width between the dilated and gas-filled cardia and the diaphragm; slight displacement of the stomach toward the right; and serration of the greater curvature. Operation revealed a large laceration in the splenic hilus.

The fact that the splenic shadow was absent was not considered of great significance, since this observation is noted at times in normal subjects.

Physical signs of peritoneal irritation were conspicuously lacking, and the patient was placed under constant observation. He remained in a state of moderate shock and continued to complain of severe pain in the upper abdomen. Since he failed to show any objective improvement in three or four hours, and since the roentgenographic changes suggested a rupture of the spleen, the surgeon elected to carry out an exploratory operation.

Upon entering the peritoneum about 2 or 3 liters of free and clotted blood was encountered. After evacuation of this blood and adequate packing, a long, irregular laceration was found through the lower pole of the spleen. Splenectomy was successfully carried out, and the patient made an uneventful recovery. The hematuria, which was apparently due to renal contusion, cleared within two days.

Conclusion

These cases appear to substantiate further the observations of Solis-Cohen and Levine⁽¹⁾, and also those of Rousseau and O'Neill⁽²⁾, who have observed that the x-ray findings characteristic of splenic rupture

1. Solis-Cohen, L. and Levine, S.: Roentgen Diagnosis of Lacerated Spleen. *Radiology* 39:707-710 (Dec.) 1942.
2. O'Neill, J. F. and Rousseau, J. P.: Roentgenologic Examination of the Abdomen as an Aid in the Early Diagnosis of Splenic Injury. *Ann. Surg.* 121:111-119 (Jan.) 1943.

may also be produced by injury of some other viscus.

It should be pointed out again that no single procedure can take the place of diagnostic acumen. Roentgenologic examination, however, offers a simple accessory procedure which may be found helpful in cases of abdominal trauma.

TREATMENT OF PROLONGED LABOR DUE TO UTERINE INERTIA

JAMES F. DONNELLY, M.D.

WINSTON-SALEM

The importance of the proper management of prolonged labor is emphasized by the records of the North Carolina Maternal Welfare Committee⁽¹⁾. These reveal that 10 of the first 100 maternal deaths reported to the committee were associated with prolonged labor. It is well known that this complication greatly increases the incidence of fetal and maternal morbidity and mortality. Another consideration which is often overlooked is that this type of labor, even when it does not produce permanent or temporary physical disability, may result in psychic trauma to the patient and her family. Long, difficult labor frequently causes the patient to develop an aversion to pregnancy which may be manifested later by disturbed family relations.

Statistics in respect to infant mortality are somewhat deceptive, since they do not reveal the subsequent course of the children born alive. Towne⁽²⁾, in a review of 147 cases of prolonged labor, found that the fetal death rate was 7 per cent, as compared with 3 per cent following normal labors. Schreiber⁽³⁾ has shown that infants who were apparently normal at birth following prolonged labor, but subsequently died of some disease unrelated to the birth injury, had many areas of gliosis in the brain (so-called devastation areas) which were due to birth trauma. The ultimate outcome in such cases

of intracranial damage has not been ascertained.

It is important to define what is meant by normal labor. DeLee⁽⁴⁾ defines labor as "that period of time from the onset of regular, rhythmical, uterine contractions to delivery of the baby." Careful scrutiny of the literature, however, reveals that the only concrete evidence of labor is progressive effacement and dilatation of the cervix; the absence of this sign indicates false or prodromal labor, which is treated in a totally different manner.

The average duration of normal labor varies from six to eighteen hours. When the labor exceeds twenty-four hours, it is considered prolonged⁽⁵⁾. The incidence of prolonged labor has been uniformly reported as approximately 4 per cent. Towne⁽²⁾ reported an incidence of 4.11 per cent; Monroe⁽⁶⁾, 4 per cent; and Siddall⁽⁷⁾, 5 per cent; but Odell⁽⁸⁾ reported an incidence of only 2.7 per cent in 1,500 cases.

There are four major causes of prolonged labor⁽⁵⁾:

1. Anomalies of the powers.
2. Anomalies of the passages.
3. Anomalies of the passenger.
4. Accidental complications such as toxemia, ruptured uterus, and intercurrent disease.

Unrecognized cephalopelvic disproportion occurred in only 6 per cent of Odell's series⁽⁸⁾, and anomalies of the fetus and accidental complications are even less common. For this reason, this discussion will be restricted to the treatment of prolonged labor due to inertia (anomalies of the powers).

Prenatal Prophylaxis

Since the most important point in the management of any obstetric problem is anticipation, the preventive factor should be considered first. The principle of prevention or "watchful expectancy" (DeLee) should be applied to all aspects of pregnancy. The treatment of prolonged labor, therefore, begins during the prenatal period, since many

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1. Lock, F. R. and Griffith, M. I.: Most Obstetrical Deaths Are Preventable. North Carolina M. J. 7:324-326 (July) 1946.
2. Towne, J. E.: Management of Prolonged Labor, M. Woman's J. 52:25-27 (March) 1945.
3. Schreiber, F.: Apnea of the Newborn and Associated Cerebral Injury, J.A.M.A. 111:1263-1269 (Oct. 1) 1938.

4. DeLee, J. B. and Greenhill, J. P.: Principles and Practice of Obstetrics, ed. 9, Philadelphia, W. B. Saunders Co., 1947.
5. Stander, H. J.: Textbook of Obstetrics, ed. 9, New York, D. Appleton-Century Co., 1945.
6. Monroe, L. T.: Prolonged Labor; Its Etiology and Management, North Carolina M. J. 3:297-303 (June) 1942.
7. Siddall, R. S.: Treatment of Prolonged Labor Due to Uterine Inertia, West. J. Surg. 50:581-587 (Nov.) 1942.
8. Odell, L. D., Randall, J. H., and Scott, G. W.: Prolonged Labor with Special Reference to Postpartum Hemorrhage, J.A.M.A. 133:735-739 (March 15) 1947.

of the causes of prolonged labor may be detected during this period and preparation made for the associated complications. Among the factors which may have a bearing on prolonged labor are bodily habitus, familial tendencies, physical activity, financial status, social status, parity, and age. No definite proof, however, has been established that any relationship exists between any of these factors and the length of labor.

Prenatal care should include a complete physical examination, basic laboratory studies, pelvic measurements, and a careful observation of the character of the pelvic soft tissues. Ideally, an x-ray of the chest and complete blood typing should be included. X-ray pelvimetry by the method of Caldwell, Moloy, and Swenson⁽⁹⁾ is extremely valuable. A base line having been established, the physician's efforts should then be directed toward rendering the patient as nearly normal as possible. Subsequent visits should be made every three weeks up to the twenty-eighth week, then every two weeks until the last month; after that time, weekly visits are essential. Patients who have complications, of course, require more frequent examinations.

Diet

Although we do not fully understand the role of diet in pregnancy, it is clear that a well-nourished patient does better both in pregnancy and in labor. The daily nutritional requirements in normal pregnancy are as follows⁽¹⁰⁾:

1. Calories—2,500
2. Protein—85 to 100 Gm.
3. Carbohydrate—200 Gm.
4. Calcium—1.5 Gm.
5. Phosphorus—1.32 Gm.
6. Iron—15 mg.
7. Vitamin A—6,000 units
8. Thiamine chloride—2 to 5 mg.
9. Riboflavin—3 to 5 mg.
10. Nicotinic acid—50 to 100 mg.
11. Ascorbic acid—50 mg.
12. Vitamin D—600 units

It has been recommended that at least one whole-grain preparation in the form of pudding, cereal, or muffins be utilized daily and

that three slices of bread, preferably of the whole-grain variety, be included in the diet. One quart of milk should be provided in addition to eggs, cheese, cottage cheese, and other dairy products. The diet should include two servings of fruit and two servings of fresh green vegetables daily. Meat or fish should be eaten at each meal, and liver at least once a week.

Efforts should be made to reduce the overweight patient by lowering the intake of calories to 1,200-1,500, while still maintaining the relatively high protein requirement of 85 to 100 Gm. daily. With any diet containing less than 1,200 calories, vitamins must be supplied in the concentrated forms, since these diets are deficient in vitamins. Some women require actual weight reduction during pregnancy, whereas others, who are underweight, should be allowed to gain more than the normal amount.

Other factors

Secondary anemia and other diseases must be corrected. The effect of tobacco and alcohol on pregnancy and labor is not yet clear⁽¹¹⁾. A number of obstetricians feel that reduction of the chloride intake results in a shorter period of labor; evidence for this belief is lacking, however. The influence of hormones on the duration of labor is still under investigation. One of the most interesting, though poorly understood, factors affecting the character of labor is the psychic one. The pregnant patient who approaches labor with the understanding that it is a normal, physiologic process will do far better than the individual who is fearful or ignorant⁽⁸⁾. It therefore behooves the obstetrician to explain carefully and truthfully the physiology and clinical course of labor and delivery, advising the patient of her role.

Management of Labor

The attending physician should see the patient as soon as possible after the onset of labor. He should first make a rapid but thorough physical examination, followed by an abdominal and rectal examination to determine the stage of labor. When a long labor is anticipated or recognized, it is well to outline the management on a basis of four-hour periods. All these women should

9. Caldwell, W. E., Moloy, H. C., and Swenson, P. C.: The Use of the Roentgen Ray in Obstetrics: Roentgen Pelvimetry and Cephalometry, *Am. J. Roentgenol.* 41:305-316 (March) 1939.

10. Beecham, C.: Diet in Pregnancy; Practical Nutrition (reprinted from Philadelphia Medicine, 1941-1942).

11. Long, R., and Donnelly, J. F.: Effect of Tobacco on the Sexual Function of the Female (in preparation).

be hospitalized and rectal examinations should be restricted. If labor has been in progress for twenty-four hours, a sterile pelvic examination, x-ray pelvimetry, and consultation with an experienced obstetrician are essential. Other examinations of the abdomen, heart, lungs, temperature, pulse, respiration, blood pressure, and fetal heart rate must be carried out and recorded at frequent intervals.

Nutrition

The maintenance of adequate nutrition during labor is of paramount importance. Gestation itself causes depletion of the glycogen stores in the liver⁽⁵⁾. In addition, water-soluble vitamins are not stored in the body and may reach low levels if not replaced daily. Patients who can take liquids orally should receive orange juice, 200 cc., alternating every two hours with similar amounts of water. The orange juice may be fortified with glucose, lactose, or other preparations. It is not wise to give larger amounts, for overloading the stomach tends to initiate vomiting.

In women who are vomiting, nutrition must be maintained parenterally. Two hundred to 500 cc. of a 10 per cent solution of glucose in water should be given by vein every four hours. Vitamins, if needed, may be added to this solution. A careful record of the intake and output should be kept. The urinary output should be maintained between 1,000 and 1,500 cc. daily. The bowel and bladder must be kept empty.

Chemotherapy

The proper use of chemotherapy in prolonged labor has reduced the incidence of dangerous infections in the mother, and also the high incidence of septicemia and pneumonia in the infant. It has been shown that both the sulfonamides and penicillin will cross the placental barrier and reach a therapeutic level in the fetus⁽¹²⁾.

If the membranes have been ruptured for twenty-four hours or longer, prophylactic chemotherapy should be started. Of the sulfonamide drugs, sulfadiazine seems to be the safest. It should be used prophylactically in doses of 1 Gm. every eight hours. If definite

infection exists, this dose should be given every four to six hours. Under the same circumstances, penicillin may be given prophylactically every three hours in a dose of 20,000 units. The therapeutic dose may be increased to as much as 100,000 units every three hours, depending on the severity of the infection and the offending organism. Streptomycin may be indicated in certain bacterial infections, but only as a last resort when the offending organism is resistant to other forms of therapy. In the event of any evidence of toxicity this drug should be discontinued at once, as it is extremely dangerous.

Sedation and analgesia

With uterine inertia, general exhaustion as well as local fatigue of the uterine musculature develops. It would appear, therefore, that some sedation is required in order to provide rest. The drug of choice should decrease uterine contractions as well as other physical activity, and provide mental relaxation. Opinions differ widely concerning the effect of various drugs on uterine contractility. Among the earliest analgesic drugs used in labor were opium and its derivatives. Murphy⁽¹³⁾ has shown that morphine, in relatively large doses, reduces the frequency but not the intensity of uterine contractions. This drug is widely recommended for the treatment of uterine inertia in all the standard textbooks, and it will produce all three of the desired effects. Proper understanding of the pharmacology of this drug and of its use in obstetrics should render it safe for both the mother and child.

Pentobarbital is probably the analgesic drug most frequently used in obstetrics. In its usual doses, the effect of pentobarbital on uterine contractions is said to be insignificant⁽¹⁴⁾. Other barbituric acid derivatives behave in a similar manner. In anesthetic doses, however, such as would be obtained by intravenous administration, they may inhibit uterine contractions.

Antispasmodics

A number of drugs have been credited with having a relaxing effect on the cervix, thus expediting its dilatation. Among these are atropine, Syntropan, calcium salts, and

12. (a) Speert, H.: Placental Transmission of Sulfanilamide and Its Effects upon Fetus and Newborn. *Bull. Johns Hopkins Hosp.* 66:139-155 (March) 1940; (b) Woltz, J. H. E., and Zintel, H. A.: Transmission of Penicillin to Amniotic Fluid and Fetal Blood in Human. *Am. J. Obst. & Gynec.* 50:338-340 (Sept.) 1945.

13. Murphy, D.: *Uterine Contractility in Pregnancy*, Philadelphia, J. B. Lippincott Co., 1947.
14. Goodman, L. and Gilman, A.: *The Pharmacological Basis of Therapeutics*, New York, The Macmillan Co., 1941.

Demerol. Spinal, caudal, and local perineal block have also been said to relax the cervix and permit shorter labors, but clinical observations do not confirm this claim. Danforth's recent article on the histologic structure of the cervix⁽¹⁵⁾ would indicate that the number of muscle fibers in the cervix is insufficient to support the theory that it can be relaxed by drugs. He states that *the cervix plays only a passive role in labor*. In other words, the cervix is dilated, but does not actively dilate or relax.

Stimulants

There is still some difference of opinion on the usefulness of posterior pituitary extract as a stimulant in prolonged labor. It is universally agreed that it is contraindicated in all cases of prolonged labor except those due to certain types of inertia⁽¹⁶⁾. In cases associated with relative cephalopelvic disproportion or abnormal mechanisms, Pituitrin stimulation is not considered safe.

Reid⁽¹⁷⁾ has recently reported extremely favorable results with the use of Pituitrin in inert labor. Eastman⁽¹⁶⁾ feels that the use of pituitary extract is warranted, provided that *rigid criteria* are observed. These are:

1. True primary inertia.
2. Actual labor, not false or prodromal labor.
3. No mechanical obstruction.
4. A live baby with a normal fetal heart rate.
5. Close observation of the patient.
6. Initial dose not exceeding $\frac{1}{2}$ minim.

If these criteria are observed, it is obvious that very little pituitary extract will be used. It is contraindicated in the grande multipara, and should not be used in the treatment of secondary uterine inertia, since the uterus is already fatigued and should be rested rather than stimulated. The question of whether Pituitrin improves the prognosis for mother and baby in primary inertia remains to be answered. *It cannot be used safely in the home under any circumstances.*

Rest and work treatment

Our present method of management consists in alternating periods of rest under sedation with periods of work without it. For psychologic reasons the rest periods should be the usual hours of sleep. During the day, the patient is given as little sedation as possible; then, when night falls, she is given morphine or other sedatives to permit her to sleep. Most of the therapeutic procedures, such as intravenous feedings, should be carried out during the active period so as not to disturb the patient's sleep.

Surgical measures

The technique of stripping or rupturing the membranes has a limited value in the management of prolonged labor. Such procedures, as a rule, will increase the frequency of contractions in the normal case of labor. We should remember, however, that an open amniotic sac predisposes to intra-uterine infection. Furthermore, Odell reported that 30 per cent of his patients with prolonged labor had premature rupture of the membranes. The wisdom of this procedure would, therefore, seem doubtful.

Efforts to dilate the cervix forcibly are universally condemned. Such measures as manual dilatation, the Voorhees bag, Willett's clamp, Dührssen's incision, Braxton Hicks' version, and forceps extraction through an incompletely dilated cervix all cause tissue destruction and spread bacteria throughout the pelvic structures, contributing definitely to the danger of serious maternal infection and increasing the risk of postpartum hemorrhage. In Odell's series⁽⁸⁾ the incidence of postpartum hemorrhage was 4 per cent in the normal patients, but 7 per cent in patients who had had prolonged labors. When a prolonged labor terminated in spontaneous delivery, the incidence of excessive bleeding was only 6 per cent; following operative delivery it was 10 per cent. *These figures stress the importance of non-interference*

Management of the Delivery

The attendant must decide what type of delivery offers the mother the best prognosis for life and for future childbearing. In general, the more conservative the delivery the better the outlook for the mother. The

15. Danforth, D. N.: The Fibrous Nature of the Human Cervix and Its Relation to the Isthmic Segment in Gravid and Nongravid Uteri. *Am. J. Obst. & Gynec.* 53:541-560 (April) 1947.
 16. Eastman, N. J.: Pituitary Extract in Uterine Inertia: Is It Justifiable? *Am. J. Obst. & Gynec.* 53:432-441 (March) 1947.
 17. Reid, D. E.: The Treatment of Prolonged Labor with Posterior Pituitary Extract. *Am. J. Obst. & Gynec.* 52:719-734 (Nov.) 1946.

fetal death rate, however, is somewhat greater when a prolonged labor is managed conservatively, since the exposure to infection and the trauma in the birth canal is increased with the prolongation of the labor⁽⁴⁾. The ultimate effect of such a labor on the living children has not been evaluated, but may be worse than we realize; nevertheless, consideration of the mother is of prime importance. Most clinics stress the importance of a conservative approach, even if it means sacrificing the infant's life.

Spontaneous delivery offers the best prognosis to the mother, although some patients with inertia or prolonged labor should have a cesarean section. Waters has achieved remarkable results with extraperitoneal cesarean section⁽¹⁸⁾; a low cervical cesarean with the use of adequate chemotherapy has also produced excellent results⁽¹⁹⁾. If vaginal delivery is chosen, outlet forceps, when the fetal head is crowning, are justified to relieve the patient of her last efforts in bearing down.

The selection of the mode of delivery rests upon several points. In the uninfected patient with uncomplicated inertia, questionable disproportion, and a valuable baby, cesarean section should be done by one of the two methods just mentioned. When considering section, however, the obstetrician must recall that the overall mortality rate for this operation in 1938 was 19 per cent. Most of these deaths occurred in patients who were exhausted or in shock.

Management of Delivery

Preparations

Adequate preparations for complications should be made well in advance of the delivery, and should include preparation of blood, plasma, and fluids for intravenous administration; selection of proper assistants; choice of anesthesia; and adequate equipment. At least 1,000 cc. of blood should be typed and available in the delivery room in anticipation of postpartum atony of the uterus with hemorrhage. Plasma and other fluids should also be available. Adequate assistance at the time of delivery may be lifesaving for the mother. For the ideal

delivery, the minimum personnel should include a trained obstetrician, an assistant to the obstetrician, a physician to care for the infant, a competent anesthetist, and two nurses. I realize that it is frequently impossible to provide all these assistants, but every effort should be made to obtain an adequate number, particularly in these cases of uterine inertia.

Anesthesia

In cases of prolonged labor there is sufficient time to plan the anesthetic well in advance of the delivery. *Spinal anesthesia* is relatively safe only under the most rigid restrictions. The death rate from spinal anesthesia continues to rank higher than that from any other anesthetic agent. The incidence of deaths from spinal anesthesia reported to the North Carolina Maternal Welfare Committee⁽¹⁾ equals the incidence of deaths from all other anesthetic agents.

Chloroform, which has been used widely as an anesthetic agent in obstetrics, has a decided toxic effect on both the heart and the liver, and for this reason has been practically abandoned in the larger clinics. *Cyclopropane* is a newer anesthetic of very high potency. Its chief toxic effect is on the heart, and it may cause sudden death from ventricular fibrillation⁽¹⁴⁾. Its main disadvantage is that the patient breathes rapidly and deeply during labor pains, and may get into an advanced stage of narcosis before it is recognized.

Nitrous oxide and oxygen is a safe anesthetic agent, provided that the oxygen concentration is maintained at 20 per cent or greater. Many patients, however, will not be free of pain with this concentration. *Sodium pentothal* has been widely used in a number of clinics, most recently at Johns Hopkins⁽²⁰⁾. Results seem favorable, but only if the drug is given for a short interval during the actual delivery. The patient should be on the table prepared for delivery before its administration is begun. *Vinethene* is a safe anesthetic which is not used widely at present⁽²¹⁾. Its chief disadvantages are that it can be used only in procedures that require less than thirty minutes, and that it deteriorates rapidly in storage.

18. Waters, E. G.: Supravascular Extraperitoneal Cesarean Section: Presentation of New Technique. *Am. J. Obst. & Gynec.* 39:422-434 (March) 1940.

19. Settle, J. M., and Wilson, L. A.: Cesarean Section in Potentially Infected Patients Using Sulfathiazole in the Uterus and Peritoneal Cavity. *Am. J. Obst. & Gynec.* 54: 801-803 (Nov.) 1947.

20. Hellman, L. M., Shettles, L. B., Manahan, C. P., and Eastman, N. J.: Sodium Pentothal Anesthesia in Obstetrics. *Am. J. Obst. & Gynec.* 48:851-860 (Dec.) 1944.

21. Donnelly, J. F.: Analgesia in Obstetrics. *Am. J. M. Sc.* 207:804-811 (June) 1944.

Ethylene and oxygen offer one of the most satisfactory combinations available, except for the danger of explosion. *Open-drop ether* is considered to be one of the safest types of anesthesia, but it is not as safe as local anesthesia. The principal danger is vomiting and aspiration. *Local pudendal block* has been championed by DeLee for many years, and certainly represents the safest anesthetic method available. It can be used for a number of procedures, including mid-forceps extraction and cesarean section.

Summary

1. The incidence of prolonged labor is approximately 4 per cent of all deliveries.
2. Prolonged labor was a factor in 10 per cent of the maternal deaths in North Carolina during the past year.
3. Adequate prenatal care may prevent many of the serious consequences of prolonged labor.
4. Adequate nutrition is of paramount importance in pregnancy and in labor.
5. Chemotherapy is essential in the management of prolonged labor.
6. When secondary uterine inertia is present, rest should be provided at intervals by the administration of morphine sulfate or other sedatives.
7. There is no evidence that any drug will cause the cervix to relax in the active sense.
8. Posterior pituitary extract is of limited value in the treatment of inertia uteri.
9. Conservative management of prolonged labor offers a far better prognosis for the mother than do the more radical procedures.
10. There is evidence to suggest that the use of extraperitoneal cesarean section or low cervical cesarean section with chemotherapy may offer a better fetal prognosis without materially increasing the maternal risk.

Physical examination. even when most thorough and complete and scientifically accurate, gives information only as to the present status of the patient. A well-taken and correctly interpreted history, with the facts placed in proper time sequence, may give valuable knowledge concerning the development of the patient's condition during the preceding months and years particularly in those diseases which may run a long and intermittent course. A patient with a toxic goitre may give a clear history of past periods of toxicity even although the basal metabolic rate is normal at the time the patient is first examined.—Leslie Hurley: *The General Practitioner and the Specialist*, M. J. Australia 1:67 (Jan 17) 1948.

PRIMARY STAPHYLOCOCCIC PNEUMONIA

DAN P. BOYETTE, M.D.

AHOSKIE

Increasing knowledge of acute bacterial pulmonary disease has shown us that pneumonia can no longer be considered a single disease entity, but that it comprises a group of specific infections, each of which produces an acute febrile illness associated with inflammatory changes in the lungs. Anatomic or descriptive terms such as lobar, broncho-, croupous, or atypical pneumonia will soon become obsolete and will be replaced by etiologic diagnoses such as type III pneumococcic, staphylococcic, rickettsial, or virus pneumonia. This concept first became important when type-specific antisera were developed and has not lessened in importance with more modern methods of treatment.

Cases of pneumonia secondary to staphylococcic infection elsewhere in the body (osteomyelitis or carbuncles, for example), and the close association of staphylococcic pulmonary infection with influenza have long been recognized, but only recently has *primary staphylococcic pneumonia* been described as a separate clinical and pathologic entity. Since few reports concerning this disease have appeared in the literature—and still fewer reports of cases treated with penicillin—it is felt that the presentation of 27 more cases, 14 of which were treated with penicillin, is warranted.

Cases Reported in the Literature

Fraenkel⁽¹⁾ in 1904 described the clinical course of influenza in which *Staphylococcus aureus* produced a rapidly fatal pulmonary disease. Chickering and Park⁽²⁾ in 1919 reported 155 cases that occurred in conjunction with the influenza epidemic of 1918, and since then several other references have been made to the apparent symbiosis between the influenza virus and the staphylococcus. McCordock and Muckenfuss⁽³⁾ pro-

From the Department of Pediatrics, Watts Hospital, Durham, North Carolina.

1. Fraenkel, A.: *Spezielle Pathologie und Therapie der Lungenkrankheiten*. Berlin, Urban und Schwarzenberg, 1904.
2. Chickering, H. T., and Park, J. H.: *Staphylococcus Aureus Pneumonia*. J.A.M.A. 72:617-626 (March 1) 1919.
3. McCordock, H. A., and Muckenfuss, R. S.: *The Similarity of Virus Pneumonia in Animals to Epidemic Influenza and Interstitial Broncho-Pneumonia in Man*. Am. J. Path. 9:221-252 (March) 1933.

duced pneumonia and death in rabbits within twenty-four to forty-eight hours by combining influenza virus and *Staph. aureus* for intranasal injection, while the staphylococcus alone produced insignificant lesions and the virus alone a non-fatal illness. Burgess and Gormly⁽⁴⁾ reported 3 cases of rapidly fatal *Staph. aureus* pneumonia during the influenza epidemic in January, 1929. Finland, Peterson and Strauss⁽⁵⁾ reported 66 cases of staphylococcic infection of the lungs complicating influenza during the fall and winter of 1940-41, and Baker⁽⁶⁾ reported 4 cases from the same epidemic in North Carolina, with thorough autopsy descriptions.

Reimann⁽⁷⁾ in 1933 presented 6 cases of primary staphylococcic pneumonia and called attention to the differences between this and other forms of pneumonia. Macgregor⁽⁸⁾ reported 10 cases in 1936, and mentioned for the first time pyopneumothorax as a complication in 3 of these cases. In 1939 Kanof, Kramer and Carnes⁽⁹⁾ reported 37 primary cases, and in 1942 Clemens and Weens⁽¹⁰⁾ reported 6 additional cases and stressed the frequent occurrence of pyopneumothorax as a complication.

Prior to the use of penicillin as a therapeutic agent, mortality rates for primary staphylococcic pneumonia ranged from 22 to 100 per cent, the lower rates being in those patients who received surgical treatment after pyopneumothorax had developed. With the advent of penicillin surgical intervention has become less important, but by no means completely obviated. Philips and Kramer⁽¹¹⁾ in 1945 reported 5 cases of staphylococcic pneumonia and empyema in infants; all received penicillin and only 2 required surgical drainage. Davis, Hyman and Ruhstal-

ler⁽¹²⁾ in January, 1947, reported 7 cases with empyema; one child died thirty-six hours after admission to the hospital; the remaining 6 were treated with penicillin, both intramuscularly and intrapleurally, and none required surgical drainage.

Cases Seen at Watts Hospital

Since the sulfonamides were introduced in 1936 until July, 1947, there have been 27 cases of primary staphylococcic pneumonia in Watts Hospital (table 1). Thirteen were treated with sulfonamides, 8 with combined sulfonamide and penicillin therapy, and 6 with penicillin alone. There were 5 deaths—a mortality rate of 19 per cent. There have been no deaths since the use of penicillin was begun.

Age of patients

Aside from cases in association with epidemics of influenza, staphylococcic pneumonia is primarily a disease of children and young adults. Previous reports have been limited almost entirely to pediatric practice. In our series there were 19 children and 8 adults. Three of the 5 patients who died were adults. Two of those presented the usually accepted picture of sudden onset with high spiking fever and a rapidly fatal course.

Clinical characteristics

The majority of writers have described the onset of staphylococcic pneumonia as being characteristically sudden, with high fever, chill, rapid respiration, and cough. There was no distinctive onset in the cases observed here. In only 7 of our patients was the onset sudden; in 2 cases it was insidious, and in 17 a rapidly progressive upper respiratory infection culminated, after three to seven days, in a severe illness with marked respiratory embarrassment (often to the point of cyanosis), remittent fever (not always high), and production of grayish, purulent, bloody sputum. One child with cystic fibrosis of the pancreas had an insidious course of eight weeks' duration and ran a low-grade fever, finally succumbing to the pulmonary infection. The autopsy findings were characteristic of staphylococcic pneumonia.

4. Burgess, A. M., and Gormly, C. F.: Pneumonia in Reaction to an Epidemic of "Mild" Influenza, with Report of Three Fulminating Cases Apparently Due to *Staphylococcus Aureus*, *New England J. Med.* 202:261-264 (Feb. 6) 1930.
5. Finland, M., Peterson, O. L., and Strauss, E.: Staphylococcic Pneumonia Occurring during an Epidemic of Influenza, *Arch. Int. Med.* 70:183-205 (Aug.) 1942.
6. Baker, R. D.: Staphylococcal Pneumonia during Epidemic Influenza in North Carolina, *South. M. J.* 35:240-247 (March) 1942.
7. Reimann, H. A.: Primary Staphylococcic Pneumonia, *J.A.M.A.* 101:514-520 (Aug. 12) 1933.
8. Macgregor, A. R.: Staphylococcal Pneumonia, *Arch. Dis. Childhood* 11:195-204 (Aug.) 1936.
9. Kanof, A., Kramer, B., and Carnes, M.: Staphylococcal Pneumonia: Clinical, Pathologic and Bacteriologic Study, *J. Pediat.* 14:712-724 (June) 1939.
10. Clemens, H. H., and Weens, H. S.: Staphylococcic Pneumonia in Infants: Occurrence of Pneumopyothorax, *J. Pediat.* 20:281-296 (March) 1942.
11. Philips, B., and Kramer, B.: Chemotherapy of Staphylococcus Aureus Infection of the Lung and Pleura in Infancy, *J. Pediat.* 26:481-488 (May) 1945.

12. Davis, W. S., Hyman, M. E., and Ruhstaller, F. D.: Penicillin as an Aid in the Treatment of Primary Staphylococcus Pneumonia with Empyema, *J. Pediat.* 30:55-63 (Jan.) 1947.

Table 1

<i>Case</i>	<i>Age (Years)</i>	<i>Days in Hospital</i>	<i>Onset</i>	<i>Positive Culture</i>	<i>Complication</i>	<i>Surgical Treatment</i>	<i>Medical Treatment</i>	<i>Result</i>
1	11/12	23	1 week	Sputum	Pyopneumo- thorax	Aspiration	Prontosil and sulfanilamide	Cured
2	4	21	3 weeks	Pleural fluid	Empyema	Thoracotomy and tidal drainage	Sulfanilamide	Cured
3	5/12	31	Sudden	Pleural fluid	Empyema	Aspiration and tidal drainage	Sulfanilamide	Cured
4	4	37	1 week	Throat	Empyema	None	Sulfapyridine	Cured
5	7	46	5 days	Throat	Lung abscess	None	Sulfapyridine	Cured
6	46	3	4 days	Lung, pleura and pericardium	Pericarditis	None	Sulfapyridine	Died
7	60	42	1 week	Pleural fluid	Empyema	Thoracotomy and tidal drainage; rib resection later	Sulfapyridine	Chronic draining sinus
8	1½	9	6 weeks	Throat and lung	(Cystic fibrosis of pancreas)	None	Sulfadiazine	Died
9	1/12	20	4 days	Pleural fluid	Empyema	Thoracotomy and tidal drainage	Sulfathiazole	Died
10	3	7	3 days	Pleural fluid	Pyopneumo- thorax	Aspiration	Sulfadiazine	Cured
11	55	2	Sudden	Sputum	—	None	Sulfadiazine	Died
12	45	5	Sudden	Sputum and blood	—	None	Sulfadiazine and sodium sulfathiazole	Died
13	26	6	Sudden	Sputum	None	None	Sulfadiazine	Cured
14	78	9	Insidious	Throat	None	None	Sulfadiazine and penicillin	Cured
15	1/12	9	3 days	Throat	None	None	Penicillin	Cured
16	5/12	17	3 days	Throat	None	None	Penicillin, sulfadiazine, and sulfathiazole	Cured
17	2	12	4 days	Throat	None	None	Penicillin	Cured
18	63	14	1 week	Sputum	None	None	Penicillin and sulfadiazine	Cured
19	2	6	1 week	Throat	None	None	Penicillin	Cured
20	8/12	6	3 days	Throat	None	None	Penicillin and sulfadiazine	Cured
21	2/12	7	2 days	Throat	None	None	Penicillin and sulfadiazine	Cured
22	50	15	Sudden	Sputum	None	None	Penicillin	Cured
23	6	12	Insidious	Sputum	None	None	Penicillin (I.M. and aerosol)	Cured
24	7/12	5	2 days	Throat	None	None	Penicillin and sulfadiazine	Cured
25	1/12	5	2 days	Throat	None	None	Penicillin	Cured
26	74	34	Sudden	Sputum	None	None	Penicillin (I.M. and aerosol) and sulfadiazine	Cured
27	17	91	Sudden	Sputum, blood and pleural fluid	Empyema	Aspiration	Penicillin (I.M., I.P. and aerosol) and sulfadiazine	Cured

I.M. — Intramuscularly

I.P. — Intrapleurally

Gastrointestinal symptoms, noted by many writers as an outstanding complaint in staphylococic pneumonia, did not appear to be any more prominent in our series than in any other type of pneumonia. One child, however, was admitted with the presenting symptom of diarrhea.

The average duration of illness was twenty-one days in those patients who recovered and eight days in those who died. These figures correspond closely with those reported from elsewhere.

Complications

The high incidence of complications has been stressed in all recent reports. Empyema and pyopneumothorax have occurred so frequently that they might be considered a part of the disease rather than a complication. Ten of the first 13 cases treated here had complications, 7 of these being either empyema or pyopneumothorax. Since penicillin has been available, only one patient has developed empyema. Reports in the literature have stressed abscess formation as being characteristic of staphylococic infection of the lungs; in our series this has not proven as important in treatment as pyopneumothorax and empyema, though these complications may have resulted from the rupture of an abscess and the formation of a bronchopleural fistula. Only one of our patients, a 7-year-old boy, developed lung abscess.

Laboratory findings

The presence of *Staph. aureus* as the predominating organism in the sputum (on both smear and culture), or in the throat culture from infants where sputum is unobtainable, and in the pleural fluid in cases of empyema was accepted as bacteriologic proof of the etiology. All of our cases had positive cultures from the sputum or throat, and those with empyema or pyopneumothorax had positive cultures from the pleural fluid. The organism was grown directly from the lung tissue on those cases that came to autopsy. It should be mentioned that the presence of *Staph. aureus* in the pleural fluid is considered a finding of great diagnostic and prognostic significance.

Too few blood cultures were made to be of any significance in this report, but it has been shown by other authors that bloodstream invasion by the staphylococcus has



Fig. 1. X-ray of the chest in a case of primary staphylococic pneumonia complicated by pyopneumothorax. Note the air and fluid levels.

the same relationship to primary staphylococic pneumonia as transitory pneumococcemia has to pneumococic pneumonia. It is felt that the bacteremia is secondary to the pneumonia and is of short duration.

The leukocyte count is by no means constant. Counts varying from 2000 to 70,000 were found in our series. It is generally assumed that a low white blood cell count indicates an overwhelming infection, and certainly it is not a hopeful sign.

X-ray findings

Roentgenographic studies are not as helpful in the diagnosis of the pneumonia as they are in the diagnosis of empyema and pyopneumothorax. X-rays should be made at frequent intervals to reveal these complications early if they develop. Views taken in the supine position—a technique often used with infants and seriously ill adults—may obscure the diagnosis, whereas a picture taken with the patient in the upright position will clearly demonstrate air and fluid levels in the affected chest cavity (fig 1).

Treatment

Before the days of the sulfonamides and

penicillin, surgery offered the best prognosis in cases of staphylococcic pneumonia with empyema or pyopneumothorax. Thoracotomy and the institution of tidal drainage was the procedure of choice, and the results were generally favorable. In the more severe cases it was necessary to resort to rib resection and irrigation.

The use of sulfonamides decreased the incidence of pleural complications little, but the combined use of sulfonamides and surgery considerably improved the mortality and morbidity rates. When penicillin became available, the mortality rates dropped even lower and, as penicillin can be injected into the pleural cavity easily and safely, surgical intervention has become less frequent. It is now employed only in those cases with massive involvement or with loculated areas of pus. Since 1943 there has been only one case of empyema here, and this was cured by aspiration of pus and the instillation of penicillin into the pleural cavity.

Medical treatment must be intensive. Sulfadiazine or sulfathiazole should be given in doses sufficient to maintain blood levels of 12 to 15 mg. per 100 cc. Penicillin should be given intramuscularly in large doses, and in cases of empyema or pyopneumothorax 100,000 to 400,000 units should be instilled into the pleural cavity daily following the aspiration of pus. Aerosol penicillin should be used to help combat the damaging process in the upper respiratory tract. Fresh blood transfusions should be given liberally, especially to infants whose antibody response is not good. Staphylococcic antitoxin was used in only 2 of our patients, one of whom died.

Surgical procedures are best withheld until it becomes evident that simple aspiration can no longer drain the chest or that the fluid has become loculated and cannot be reached with the aspirating needle. It is then imperative that the surgeon librate the pus. Thoracentesis with withdrawal of air affords relief in cases with pneumothorax.

Pathology

The pathologic lesions in primary staphylococcic pneumonia are limited to the respiratory tract. Frequently the epiglottis, larynx, and trachea are covered with a dirty, fibrinous, purulent exudate, and the mucosa is ulcerated. Practically always the bronchi and bronchioles are filled with bloody pus

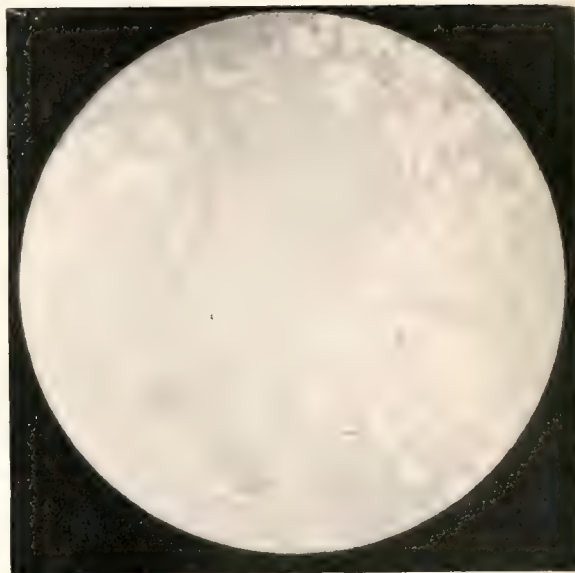


Fig. 2. Photomicrograph of a section of the lung from a case of primary staphylococcic pneumonia showing an area of consolidation, alveolar destruction, and early abscess formation.

and the bronchial mucosa is swollen and granular, the walls being infiltrated with polymorphonuclear leukocytes and mononuclear cells. The lungs are dark red in color, and are firm; the alveolar spaces are filled with pus, which completely destroys the normal architecture. Clumps of bacteria can be seen in those areas in which the alveolar markings are obliterated. The pleura is thickened; it is covered with a fibrinous exudate, and is hemorrhagic. In cases of empyema or pyopneumothorax the pleural cavity contains considerable cloudy hemorrhagic fluid from which the staphylococcus can be cultured easily. The hemorrhagic phenomenon and the tendency toward the formation of multiple microscopic abscesses are outstanding characteristics (fig. 2).

Summary and Conclusion

Between 1936 and July, 1947, there have been 27 cases of primary staphylococcic pneumonia in Watts Hospital, 5 of which were fatal. Complications occurred in 10 of the 27 cases. In the 14 cases treated with penicillin since it was introduced in 1943 there has been only one case of empyema and no deaths.

The clinical and pathologic features of primary staphylococcic pneumonia have been discussed, and a brief outline for therapy has been presented. Penicillin, intra-

muscularly, intrapleurally, and by inhalation, has been the factor responsible for lowering the mortality rate and the incidence of complications.

It is to be assumed that, with the liberal use of sulfadiazine and penicillin in modern practice, many cases of staphylococcal pneumonia are nipped in the bud, and therefore go unrecognized. Generally speaking, staphylococcal pneumonia is not dreaded now as it formerly was, but it still demands respect as a virulent disease which is controlled only by vigorous therapy.

Maternal Welfare Section*

The Intelligent Use of Cesarean Section

Last month's issue of the NORTH CAROLINA MEDICAL JOURNAL carries an article by Dr. John T. Williams entitled "Cesarean Section in the Interest of the Mother." In this article Dr. Williams states that he has performed 251 cesarean sections during the five and a half years from January 1, 1942, to June 30, 1947. The article deals primarily with his philosophy of the indications for cesarean section and with the operative technique which he has used with such remarkable good luck, since he states that no maternal deaths have occurred in this series.

The Maternal Welfare Section of the NORTH CAROLINA MEDICAL JOURNAL for November, 1946, considered cesarean section as an obstetric problem. The Maternal Welfare Committee recognized the importance of this operation as a life-saving procedure for many patients, but found that the primary maternal mortality associated with cesarean section in the United States is at least 10 per cent. Statistics were given which showed that 24 per cent of the maternal deaths in a fifteen-state area were associated with an abdominal delivery. Twenty-one of the 175 maternal deaths which occurred in North Carolina during the past twenty months were associated with cesarean section. Fourteen of these 21 patients had evidence of toxemia of pregnancy.

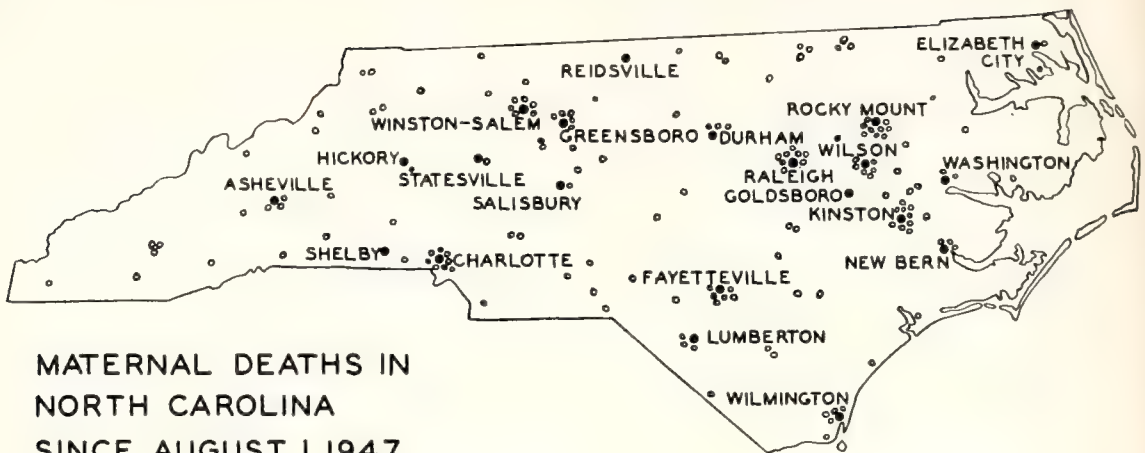
*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

Frank R. Lock, M.D.,	J. S. Hunt, M.D.
Chairman	T. L. Lee, M.D.
J. Street Brewer, M.D.	Ivan Procter, M.D.
G. M. Cooper, M.D.	R. A. Ross, M.D.
E. W. Franklin, M.D.	R. A. White, M.D.

Dr. Williams has worked under almost ideal conditions at Chelsea Memorial Hospital and other fine hospitals in Boston. He has the advantage of being a highly trained surgeon with a highly trained technical staff to assist him. A blood bank is available. The anesthetic is administered by an expert anesthetist, who gives the patient minute supervision during the entire operation. Evidently the vast majority of his cases were elective operations performed before the onset of labor, when the patient was in ideal physical condition.

Conservatism in the use of abdominal delivery has been advocated by every obstetric leader — DeLee, J. Whitridge Williams, Stander, Beck, and others. Their reason is the high mortality rate which is inevitably associated with the operation. The incidence of cesarean section compatible with good obstetric practice is generally held to be less than 5 per cent. Even if Dr. Williams has a huge obstetric practice and delivers 500 babies each year, 251 cesarean sections in five and a half years would make the incidence of cesarean section for his patients almost 10 per cent.

Dr. Williams recommends the use of spinal anesthesia, but makes no reference to a special technique or dosage of the anesthetic drug. We recognize the safety of spinal anesthesia administered by the special techniques recommended by Cosgrove and Adriani. The use of ordinary spinal anesthesia with surgical doses of the drug chosen, however, is exceedingly hazardous for obstetric patients. Our records include 6 cases of sudden death following the administration of a spinal anesthetic of the usual type. A seventh maternal death resulted from an infection of the meninges which began with a spinal anesthetic administered for a cesarean section. The Maternal Welfare Committee has pointed out the necessity for an expert anesthetist to administer spinal anesthesia. The patient should be given preoperatively a small dose of a barbiturate to protect her from a toxic reaction to the drug. An attendant should watch the patient constantly, recording the pulse, blood pressure, and respiration at intervals of not less than five minutes. Continuous oxygen should be given, and intravenous fluids should be prepared and ready for administration in case severe hypotension or shock



MATERNAL DEATHS IN NORTH CAROLINA SINCE AUGUST 1, 1947

develops. Many authors feel that a vasopressor substance such as ephedrine should be administered prior to any spinal anesthetic.

Dr. Williams recommends the use of the Kerr type of low cesarean section, with a transverse incision made in the lower segment of the uterus. This technique is useful in the hands of a highly skilled operator. It has been disapproved by the Philadelphia Maternal Welfare Committee, however. In their experience, extensions of the incision, when they occur, may involve the uterine vessels. The profuse hemorrhage which results may not be controllable under some circumstances. The longitudinal incision is to be preferred for most operators.

In conclusion, the Maternal Welfare Committee recognizes cesarean section as a life-saving procedure. Even under ideal conditions, however, the risk of death from hemorrhage, sepsis, embolism, anesthesia, and other complications is fully 2 per cent, and the infant mortality exceeds that of vaginal delivery.

The art of understanding people and the complex situations in which they find themselves is not an easy one to acquire. It calls for much hard work. The doctor must be a person who is willing to do this work, not one who seeks to find an easy answer. The doctor is now being called upon to be a sociologist as well as a physician in his outlook. The narrow fields now being cultivated in medicine, surgery or any of the specialties are not broad enough to retain a full professional status for their practitioners. Without a social point of view these specialties are trades.—Dwight O'Hara: Admission to Medical Schools, Rhode Island M. J. 31:186 (March) 1948.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

J. C. TRENT, M.D., F.A.C.S., *Editor*

IV

PULMONARY RESECTION

Thoracic surgery as a specialty came of age with the establishment of pulmonary resection as a routine procedure. Today intratracheal positive pressure anesthesia, massive blood transfusion, and chemotherapy make it possible to perform lobectomy and pneumonectomy daily with relative safety on all types of patients.

The advances in thoracic surgery for many years emanated from Europe. Not until 1925, after the publication of John Alexander's *Surgery of Pulmonary Tuberculosis*, did the American surgeon attack the problem of chest surgery with any degree of enthusiasm. Since that time the emphasis in this field has gradually shifted from the continent to America, where leadership has been maintained to the present time.

Glück⁽¹⁾ in 1881 first demonstrated that resection of an entire lung could be successfully performed in rabbits. Biondi⁽²⁾ a year later reported 30 pneumonectomies in animals. Other investigators continued to report experimental results, but it was not until 1891 that a successful limited pulmonary resection was performed on a human

1. Glück, T.: Experimenteller Beitrag zur Frage der Lungenexstirpation, Berl. klin. Wchnschr. 18:615-618, 1881.
2. Biondi, D.: Estrazione del polmone, Gior. internaz. d. Sc. med., Napoli, n.s. 4:759, 1882, and 5:218: 117, 1883.

being by Tuffier⁽³⁾, who resected an indurated tuberculous area in the upper lobe. The patient remained well for seven years, then died of grippe. Other sporadic reports of successful partial or complete lobectomies, chiefly in cases of tuberculosis or bronchiectasis, appeared in the following three decades. It was not until 1929, however, that attention was forcefully called to the feasibility of lobectomy as a routine procedure. Dr. Harold Brunn⁽⁴⁾, of San Francisco, reported 6 lobectomies with only one death. He wrote:

"It seems remarkable that so few articles or discussions are to be found during the last few years on lobectomy. The discussion has rather concerned the substitutes that might be used in its stead, based no doubt on the theory that the operative mortality forbids its use or that the technic of the operation has become a fixed procedure.

"Lobectomy, that is, the removal of one or more diseased lobes of the lung, must appeal to every one as the ultimate goal in surgical procedures on the chest. By this method the diseased lobe is removed at one stroke; the period of convalescence is diminished, and deformity does not result. The method also more nearly conforms to the procedures surgeons are accustomed to apply for diseases in other organs of the body. Just as cholecystectomy superseded cholecystotomy and as hysterectomy superseded the old time method of extraperitoneal treatment of the uterine stump for fibroids, may one not also expect in the future that with improved technic and lowered mortality lobectomy will become the operation of choice in many diseased conditions of the lung?"

Following this report the practice of lobectomy spread, and within the span of a few years it became an established procedure. More recently Overholt in Boston has revived the operation of segmental lobectomy, applying the newly gained knowledge of the segmental anatomy of the lung described by Brock, Huber and Jackson, and others.

After Glück's pioneer work on pneumonectomy in rabbits, much experimental work on the subject was performed during the succeeding fifty years, principally on healthy animals. This work obviously, therefore, could not be transferred directly to the treatment of pulmonary disease in man, and it was not until 1931 that the first complete removal of a lung was planned and successfully executed.

3. Tuffier, T.: *Chirurgie du poulmon en particulier dans les cavernes tuberculeuses et la gangrène pulmonaire*, Paris, Masson et Cie., 1897, pp. 31-36; also, *Cong. internat. d. sc. med.*, a Mo-cov, 1897, Sect. Chir., 5-62.

4. Brunn, H. B.: *Surgical Principles Underlying One-Stage Lobectomy*, Arch. Surg. 18:190-315 (Jan.) 1929.

In that year Rudolf Nissen⁽⁵⁾ of Berlin removed the bronchiectatic left lung of a 12-year-old girl by applying a mass ligature about the lung root and allowing the lung to slough out. Dr. Cameron Haight of Ann Arbor, in 1932, performed the second successful pneumonectomy, also for bronchiectasis, using a similar technique. A few months later Dr. Evarts Graham⁽⁶⁾ of St. Louis performed the first one-stage pneumonectomy, using the individual ligation technique for the root vessels and bronchus. The patient, a 48-year-old physician who had a squamous-cell carcinoma of the bronchus, is alive and well today.

Following these successful cases the operation was taken up rapidly and improved by many surgeons, until today large series of cases have been reported with extremely low mortality⁽⁷⁾.

In retrospect, the three papers which appear to have exerted more influence than any others, perhaps, upon the development of our technique of lobectomy and pneumonectomy are Harold Brunn's "Surgical Principles Underlying One-Stage Lobectomy" (1929), Cameron Haight's "Total Removal of Left Lung for Bronchiectasis" (1932⁽⁸⁾), and Evarts Graham's "Successful Removal of an Entire Lung for Carcinoma of the Bronchus" (1933).

J. C. T.

5. Nissen, R.: *Exstirpation eines ganzen Lungenflügels*, Zentralbl. f. Chir. 58:3003-3006 (Nov. 21) 1931.

6. Graham, E. A. and Singer, J. J.: *Successful Removal of an Entire Lung for Carcinoma of the Bronchus*, J.A.M.A. 101:1371-1374 (Oct. 28) 1933.

7. Meade, R. H., Jr., Kay, E. B., and Hughes, F. A.: *A Report of 196 Lobectomies Performed at Kennedy General Hospital Chest Surgical Center from 1943 to 1946, with One Death*, J. Thorac. Surg. 16:16-29 (Feb.) 1947.

8. Haight, C.: *Total Removal of Left Lung for Bronchiectasis*, Surg., Gynec. & Obst. 58:768-780 (April) 1934.

The doctor as middle-man. Medicine has made wonderful strides in the treatment of physical disease. We are all using the recent therapeutic agents every day, and it is not necessary to enumerate them. Through our dependence on the efficacy of specific therapy, however, we have become inclined to realize less and less the need of careful explanation and encouragement to the patient. I believe we are losing the art of medicine because we have been so excellently fortified by effective and specific drugs. One shot, one cure, so to speak, and we can be as rough and gruff as we please—the patient will get well. We are apt to become the middleman between the patient and the efficient ampule . . . So far, we have not invented a drug which can explain carefully to patients the nature of their illness and give them encouragement in their struggle. In the patient's mind, the doctor is still the one barrier between him and death.—A. S. Anderson: *Mental Repercussion in Physical Disease*, J. Florida M. Assoc. 34: 290 (Nov.) 1947.

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APRIL, 1948

THE CAMPAIGN AGAINST CANCER

It is a characteristic American fallacy that virtually anything can be bought with money. Like so many other fallacies, however, this one has some truth within its fabric. It is fallacious to think that money alone will buy a cure for cancer; but it is certain that the expenditure of large sums is necessary for a successful campaign against this dread disease. There is still much to be learned about cancer—but science is on the march, and the contributions made by the American people will hasten materially the day of victory.

Just now it seems that the road ahead is to be long, hard, tedious, and filled with obstacles. It may be that the conquest of cancer, like that of tuberculosis, will have to depend on careful, patient search for the in-

dividual cases in their incipency, and appropriate treatment of each one. Or it may be that we are on the verge of discovering some remedy which will be as potent against cancer as streptomycin is proving to be in many hitherto fatal types of tuberculosis. At least, however, we know that cancer does not get well spontaneously, and that, whatever the final answer to the problem, the search for the individual cases must go on.

The story of what North Carolina's State Board of Health is doing to fight cancer, in cooperation with the Cancer Committee of the State Medical Society and the North Carolina Division of the American Cancer Society, was told by Mr. William H. Richardson in his weekly broadcast on April 17, part of which is quoted below:

"North Carolina's intensive fight against cancer was launched officially last month, when the Cancer Control Division of the State Board of Health began operation, with Dr. Ivan M. Procter, of Raleigh, as its director, and Mildred Schram, Ph.D. of Philadelphia, as his associate. They have been assigned offices in the Health Building, Caswell Square.

"Dr. Schram, formerly of Saint Louis, Missouri, served from June, 1932, until January of this year, as executive officer of the Donner Cancer Foundation of Philadelphia, formerly the International Institute of Cancer Research . . . Dr. Schram planned and organized a series of cancer prevention clinics, first in five teaching hospitals in Philadelphia, the number having grown to eleven, to include a group of non-teaching hospitals. She was a delegate to the International Cancer Congress in Madrid, in 1933, a guest of the Research Institute, Royal Cancer Hospital, London, and one of eleven American women cited for service in cancer control by the American Cancer Society.

"Upon assuming his duties, Dr. Procter outlined the policy to be followed in North Carolina's intensive war on cancer:

"The program is to be conducted locally through the Board of Health, in cooperation with the physicians comprising the medical society of the county in which a clinic is located. The local physicians will render the professional service.

"There will be two types of clinics. Detection clinics will be operated in both the larger and smaller communities of the state. These will be the medium of (1) screening the largest number of applicants, in order to find cancer in its earliest stages and while almost completely curable, (2) to educate the public in prevention, through early diagnosis and cure, and (3) to establish annual examinations among applicants.

"In North Carolina it will be the desire and policy of the Board to devote its funds and efforts to cancer detection and control, leaving the general health maintenance to the patient and practicing physician. The physical examination will be limited to those parts of the body where cancer most commonly occurs and is detectable and curable. Those examinees who have positive findings will be referred to their personal physician. Examinees

without a personal physician will be asked to select one from a list prepared by the local medical society.

"Cancer diagnostic and management clinics will be established in cities where the services of pathologists and other specialists are available. Suspected cancers located in detection centers will be referred to cancer diagnostic clinics for final diagnosis and recommendation as to management. The patient will be returned to his or her personal physician for treatment.

"Clinics, where practical, will be conducted in hospitals approved by the American College of Surgeons, but all cancer clinics must be approved by the American College of Surgeons.

"There will be seven diagnostic cancer clinics and 10 detection clinics."

The fight against cancer costs money—and much money. More than money is needed, however. We need the interest and the enthusiasm of doctors—especially of family doctors. Upon them rests the greatest responsibility for supplementing the State Board of Health's cancer detection program, and for seeing that the diagnosis of cancer is followed promptly by the proper treatment.

* * * *

CHILD HEALTH SERVICES IN NORTH CAROLINA

The supplement which is published with this issue of the NORTH CAROLINA MEDICAL JOURNAL contains the report of a study of child health services in North Carolina directed by the American Academy of Pediatrics, with the cooperation of the United States Children's Bureau and the United States Public Health Service. It is worth careful reading, for many reasons. One is that North Carolina was given the honor of being used as the "pilot" state for a nationwide survey to determine existing facilities for health care of children. Another reason is that the report contains much valuable information pertaining to North Carolina's problems of medical care. The final chapter—"Conclusions and Recommendations"—is especially worth while.

Apropos of the current renewal of interest in the general practitioner, it is worth noting that, of the visits made to children in North Carolina during the time included in the survey, 79 per cent were by general practitioners. This figure certainly does not suggest that the day of the family doctor is over in this state, at least.

A SOLUTION FOR THE PROBLEM OF NIGHT CALLS

A reasonable solution of the night call problem, which was discussed in last month's issue⁽¹⁾, has been offered by Dr. George Lull, secretary of the American Medical Association. Dr. Lull says that a number of county medical societies already maintain a physicians' telephone exchange where doctors' calls may be received and doctors located if their office or home telephones do not respond. Such an exchange can be utilized as at night or on holidays, simply by furnishing the exchange with a list of physicians who are able and willing to make night calls. Such physicians would probably include the younger general practitioners, newcomers to the community, and others in general practice. If such a roster were available, and its availability widely publicized, night calls for medical service would soon gravitate to this center and the patient would be assured the services of a physician.

Under such a system the necessity for calling many doctors would be eliminated. Two calls at most would be necessary. Where there is no physicians' telephone service, it might be possible to have the hospitals cooperate by handling such night calls.

The Medical Society of the District of Columbia and the Milwaukee County Medical Society have found such a plan practical, as have a number of other societies.

By this simple and practical expedient, which is doubtless in effect in modified form in a number of communities, the sick can be served and the medical profession can redeem its pledge of unselfish public service.

It is highly important that where such arrangements exist they be brought to the attention of the lay people in the community through appropriate public channels, not once but repeatedly, to keep the shifting populations well informed.

Few problems in the field of medical service have aroused so much public discussion. Whether resentment against physicians is justified or not, it does harm. The solution for this problem is so eminently simple and would reflect so favorably upon physician-patient relationships that medical societies everywhere are urged to give it serious consideration immediately.

1. Night Calls. Editorial, North Carolina M. J. 9:154 (March) 1948.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF
WAKE FOREST COLLEGE

This 49-year-old cotton-mill worker was admitted to the North Carolina Baptist Hospital on October 22, 1947, complaining of shortness of breath for the past ten weeks. In the summer and fall of 1945 he had had two attacks similar to the present one. Each of these attacks was characterized by progressive dyspnea on exertion and some epistaxis. During the first attack his blood pressure was found to be 170. He was given digitalis and showed considerable improvement. His second episode of dyspnea was accompanied by ankle edema and was attributed to the fact that he neglected taking his digitalis. During this attack his systolic pressure went as high as 221. Ten weeks before admission to the hospital the patient again noted exertional dyspnea which was accompanied by some stinging pain in the chest but no true angina pectoris or palpitation. Marked orthopnea, ankle edema, and gaseous distention also developed and progressed up until the time of admission.

The patient stated that he did not tolerate greasy foods well and that he had been jaundiced with the last two episodes of dyspnea. Ten years before admission the patient had passed a kidney stone spontaneously, and in the fall of 1945 (during the second episode of dyspnea described above) he had hematuria for about one week. At this time he was taking Doan's kidney pills. His family history was non-contributory.

Physical examination on admission showed the temperature to be 99.8 F., the pulse 100, respiration 40, blood pressure 176 systolic, 100 diastolic. The patient was a large, edematous male appearing both acutely and chronically ill. He was thought to be icteric and was profoundly short of breath. There was marked pitting edema of the feet and ankles. The pupils were round, regular and equal, and reacted sluggishly to light. The optic fundi showed blurring of the disc margins, silver-wire arterioles, and minimal arteriovenous nicking. There were several pin-point exudates and hemorrhages scattered through both fundi. The pharynx was somewhat reddened and there was marked distention of the veins in

the neck. The chest was symmetrical with equal expansion, and moist expiratory rales were heard at both lung bases posteriorly. No findings indicative of pleural fluid were noted. The heart was enlarged to the mid-axillary line on the left; a gallop rhythm was noted, and a harsh, blowing, grade 3 systolic murmur was heard over the entire precordium. The pulmonic second sounds were accentuated more than the aortic. Abdominal examination was unsatisfactory, but the abdomen was thought to contain some ascitic fluid. Rectal and neurologic examinations were not remarkable.

Blood count showed 3,690,000 red cells, 9.5 Gm. of hemoglobin, and 10,100 white blood cells, with a normal differential. The urine had a specific gravity of 1.018 and gave a 4-plus reaction for albumin; it contained no sugar. Microscopic examination revealed 3 to 4 white blood cells per high power field and an occasional granular cast. The nonprotein nitrogen was 120 mg. per 100 cc. of blood. The carbon dioxide combining power of the blood was 12.5 milli-equivalents per liter. Blood chlorides were 628 mg. per 100 cc. The icterus index one week after admission was 10 units. A phenolsulfonphthalein test showed 30 per cent excretion of the dye in two hours. The patient's vital capacity was 600 cc. A Kahn test of the blood was negative. Stool examination showed no occult blood, but Endolimax nana and the larvae of *Strongyloides stercoralis* were found.

An electrocardiogram showed left axis deviation and changes interpreted as indicating myocardial disease and digitalis effect. A chest x-ray showed cardiac enlargement without typical configuration, and bilateral pulmonary edema.

During his hospital stay the patient's temperature was essentially normal except for two rises to 101.2 and 100.2 F. His pulse varied between 70 and 130. During the first twenty-four hours he was given 0.8 mg. of Digitoxin intravenously and intramuscularly, and 0.3 Gm. of Digitora. During the remainder of his hospital stay he received from 1 to 3 cat units of Digitora daily for a total of 1.4 Gm. in eight days. He was first given nasal oxygen and later put in an oxygen tent, and was also given aminophylline, ammonium chloride, magnesium sulfate, morphine, and Demerol.

In spite of these therapeutic measures he continued to be extremely short of breath and his blood pressure remained between 240 and 220 systolic, 160 and 140 diastolic. His urinary output varied between 1500 and 2000 cc. daily. The signs of congestive heart failure became more marked. On November 1, 1947, he had a tonic convulsion and died shortly thereafter.

Discussion

DR. DAVID CAYER: This 49-year-old man dated the onset of his present illness to about two years before admission, when he began having exertional dyspnea and was found to have hypertension. He described episodes characteristic of paroxysmal dyspnea which in all likelihood represented left ventricular failure. The most frequent causes of left ventricular failure are hypertension, coronary artery disease, and insufficiency or stenosis of the aortic valve. Occasionally such episodes of dyspnea may be due to severe mitral stenosis in an individual who has a competent right ventricle; when tachycardia develops in such a person, pulmonary congestion results from the inability of blood to pass through the narrow mitral orifice.

Ten weeks before admission the patient again noted dyspnea, accompanied for the first time by "stinging pain" in the chest. Apparently the person who took the history felt that this pain did not represent true angina. The patient's dyspnea progressed to orthopnea, which was accompanied by abdominal distention and edema.

The vague gastrointestinal disturbances of which the patient complained are not uncommon in individuals with myocardial disease, particularly during episodes of congestive failure. The accompanying edema of the stomach and bowel, and the presence of ascitic fluid produce secondary changes in gastrointestinal motility and digestion.

Although the patient is said to have been jaundiced with each episode of congestive failure, no mention is made of the color of the urine or stools at these times. He was thought to be icteric when admitted to the hospital, but the icterus index was only 10 units. It is not uncommon for cardiac patients who have edema, pallor, and anemia to appear to have mild jaundice. True jaundice is an unusual finding in uncomplicated

heart failure. Where right-sided heart failure and hepatic congestion have been present for years, jaundice may appear, but liver enlargement is easily demonstrated in such patients; there is no mention of such a finding in this patient. Jaundice may also follow large pulmonary infarcts; in such cases it is due to the fact that the rapid destruction of blood liberates pigment faster than the liver can remove it from the circulation. Nothing in the physical examination or history suggests pulmonary infarction in this case, and no such finding was noted in the report of the chest film.

In a patient this age the gross hematuria noted in the past history would most likely be due to a stone, infection, or carcinoma. The absence of chills, fever, or pyuria, as well as the duration of the genito-urinary symptoms, makes the possibility of infection and carcinoma unlikely, and we have the additional information that the patient passed a stone ten years before admission.

The findings in the optic fundi are indicative of an extensive vascular disturbance. The signs described in the chest could be explained on the basis of a moderate degree of pulmonary congestion.

The cardiac findings are indicative of both hypertrophy and dilatation. It would be helpful to have a more complete description of the "harsh, blowing, grade 3 systolic murmur" which was described as audible over the entire precordium. It is not stated whether there was any point of increased intensity or radiation, and there is no description of the murmur at the lung base, and no mention of a thrill. The most likely explanation for the murmur would be regurgitation of blood from ventricle to auricle, due to heart disease and left ventricular dilatation, to a deformity of the mitral valve, or to other factors such as the anemia. There is nothing to support the diagnosis of aortic or pulmonary stenosis as a cause of the murmur. I would be most reluctant to make the diagnosis of a patent ductus arteriosus without any mention of a diastolic component to the murmur. The finding of an accentuated second pulmonic sound is of considerable interest, however, and suggests the possibility of some right-sided heart strain. Although an accentuated second pulmonic sound may accompany generalized heart failure, it is seen more frequently in

cases of mitral stenosis or where pulmonary disease is present. There is nothing to suggest any primary pulmonary disease, however.

The film of the chest should have shown a more typical left ventricular configuration if hypertension alone were responsible for the patient's congestive failure. The x-ray findings, plus the accentuation of the second pulmonic sound, suggest the possibility of a second cardiac lesion, rheumatic or possibly congenital, complicating the hypertension.

I believe that the most likely explanation for all the findings in this case would be a benign form of nephrosclerosis of several years' duration, with a rapid terminal progression of this disease. The autopsy probably showed generalized arterial disease, involving coronary arteries as well. The possibility of an additional cardiac lesion, either rheumatic or congenital, is suggested by the x-ray and auscultatory findings. There is also a history of renal stones. I do not believe any gallbladder disease or primary gastrointestinal lesion was found.

Dr. Cayer's Diagnoses

1. Nephrosclerosis
2. Generalized arteriosclerosis involving the aorta and coronary arteries.
3. ? Rheumatic valvular deformity or congenital heart disease.
4. Nephrolithiasis

Anatomic Discussion

DR. LADD W. HAMRICK, JR.: The most significant anatomic findings were in the cardiovascular, pulmonary, and respiratory systems.

The heart weighed 750 Gm. and showed marked hypertrophy of the left ventricle and moderate hypertrophy of the right ventricle. An area of myocardial infarction 2 by 3 cm. in diameter was present at the apex of the left ventricle, and a small mural thrombus was attached to the endocardial surface. This infarct was approximately three weeks old. There were two defects of the interauricular septum. One of these measured 1 by 0.5 cm. and represented a patent foramen ovale; the other measured 4 by 3 cm. and was located at the base of the septum.

The coronary arteries showed marked arteriosclerosis, but no thrombi were demon-

strable in their lumina. Throughout the musculature of the left and right ventricles there were many small areas of fibrosis. The aorta and the majority of the large vessels of the body showed moderate to marked arteriosclerosis. Arteriolar sclerosis was present in the kidneys, adrenals, pancreas, and spleen.

The right pleural cavity contained 1400 cc. of amber fluid. Both lungs showed pulmonary edema, large numbers of heart-failure cells, and moderate interstitial fibrosis.

Each kidney weighed 175 Gm. and presented a finely granular surface. Several small calculi were attached to the renal papillae in the pelvis of each kidney. Microscopic examination showed changes consistent with the marked degree of arteriolar sclerosis.

Other findings included chronic passive congestion of the viscera, early cardiac cirrhosis of the liver, an infarct of the spleen (1 by 1 cm. in diameter), and 1750 cc. of fluid in the peritoneal cavity.

Death in this case was apparently due to a combination of marked congestive heart failure and renal insufficiency. The interauricular septal defects probably played little part in the patient's demise, except that they accentuated the degree of heart failure once it was established.

Anatomic Diagnoses

1. Arteriolar nephrosclerosis and arteriolar sclerosis of the spleen, pancreas and adrenals
2. Arteriosclerosis, generalized.
3. Myocardial hypertrophy and myocardial fibrosis
4. Myocardial infarction at the apex of the left ventricle, with a mural thrombus.
5. Patency of the foramen ovale
6. Patency of the ostium primum
7. Chronic passive congestion of the lungs with pulmonary edema and pulmonary fibrosis
8. Early cardiac cirrhosis of the liver
9. Hydrothorax, right, and hydroperitoneum
10. Infarct of the spleen
11. Renal calculi, bilateral

Concluding Remarks

DR. C. C. CARPENTER: I wish to confine my discussion to the hemodynamics of inter-

auricular septal defects. I refer you to Uhley's explanation of the shunting of blood from the left to the right auricle through septal defects⁽¹⁾. He describes his idea of the hemodynamics involved as "a new concept" of the mechanism. The case reported by him also showed mitral stenosis.

It is generally accepted that the blood flows through atrial septal defects from left to right, thereby placing a mixture of arterial and venous blood in the right auricle. To make this possible, the pressure in the left auricle must be greater than that in the right auricle. It is obvious that mitral stenosis causes an obstruction to the normal flow of blood from the left auricle to the left ventricle, and increases the left intra-auricular pressure. Hence, if there is an opening between the auricles, blood flows from left to right.

Uhley contends that the flow from left to right is assisted by posture. When man assumes the upright position, the anatomic position of the heart is such as to place the left auricle above the right. In order to study the effect of gravity, Uhley cemented two rubber bags of equal size and thickness together, and made an opening between them through the common wall. Water was passed through the two bags with equal pressure, while the bags were in a vertical position. The bags remained equal in size, and the outflow at the bottom from each was equal. The chambers were then placed on the side, one being above the other, and the experiment was repeated. The lower chamber slowly dilated as the upper became correspondingly smaller. This experiment was advanced by Uhley as evidence that the shunting of blood from the left to the right auricle, in the presence of a defect in the interauricular wall, is due to gravity.

Brannon, Weens and Warren⁽²⁾, using the technique of catheterization of the heart and great vessels, made a study of Uhley's concept. They inserted a catheter into the upper vena cava and took samples of blood from a patient without a septal defect. They repeated the procedure for the inferior vena cava and for the right auricle, and found

the oxygen content of the three samples of blood essentially the same. The experiment was repeated in a patient with an interauricular septal defect. The sample of blood removed from the cavity of the right auricle had a higher oxygen content than the samples removed from the superior and from the inferior vena cava. This finding was considered to be evidence that, in patients with interatrial septal defects, blood is shunted from left to right.

In order to evaluate the concept advanced by Uhley, the patient with the catheter in the right auricle was suspended in a vertical position with the head down, and additional samples of blood were obtained as in the former experiment. The oxygen content of blood in the left auricle was not reduced, as it should have been if the flow of blood had been reversed by gravity. According to these investigators, the flow of blood from left to right in interauricular septal defects is independent of gravity.

Another point of interest is the accentuation of the pulmonic second sound in the case under discussion. We have generally considered this to be due to associated mitral stenosis. In this case, however, there was no mitral stenosis. Brannon, Weens, and Warren have also noted accentuation of the pulmonic second sound in this condition, without mitral stenosis.

Good News About Diabetes

"The life expectancy of diabetics has been constantly increasing over the last twenty-five years and probably will continue to gain," Herbert Yahraes declares in *Good News About Diabetes*, a 32-page Public Affairs Pamphlet issued recently.

The average 10-year-old diabetic can expect to see 55; the 30-year-old can expect to live to 60-plus; the 50-year-old to 66; and the 60-year-old to more than 70.

This good news about an ailment which ranks eighth among all causes of death in the United States comes at a time when all indications show that there are about twice as many diabetics as anyone had suspected. The probability is, according to the pamphlet, that we have a diabetic population of about 2 million. "Almost half these people don't know that they have diabetes and many of them don't even know they are sick," Mr. Yahraes points out.

Good News About Diabetes, by Herbert Yahraes, is Pamphlet No. 138 in the series of popular, factual, 20-cent pamphlets issued by the Public Affairs Committee, Inc., nonprofit, educational organization at 22 East 38th Street, New York 16, N. Y.

1. Uhley, M. H.: Lutembacher's Syndrome and a New Concept of the Dynamics of Interatrial Septal Defect, *Am. Heart J.* 24:315-328 (Sept.) 1942.
2. Brannon, E. S., Weens, H. S., Warren, J. V.: Atrial Septal Defect: Study of Hemodynamics by the Technique of Right Heart Catheterization, *Am. J. M. Sc.* 210:480-491 (Oct.) 1945.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

GUARDIAN AND WARD: A court may grant general guardianship for the person and his estate, or the appointment of guardians for the person and the estate may be separate.

In this case a retired minister who had, during his active years, been able to acquire a small fortune became so infirm physically and mentally that he appeared in need of a guardian. The court was duly petitioned for a general guardian to manage his estate and to have custody of his person. Specifically the estate consisted of the homestead and a dwelling situated back of the family residence, a vacant lot, and seventy-seven shares of American Telephone and Telegraph Company's preferred stock. The total income from the property, including a small pension, amounted to approximately \$1,480.00 per year.

The evidence produced in superior court tended to show that the alleged incompetent did not know the extent of his holdings, had for some time failed to collect his rents and pay taxes, and had some time previously executed a deed of which he had no remembrance. The court found as a fact that the man was the owner of considerable real estate, occupied by tenants who paid no rent, and that he was unaware of the nature and extent of his personal property. The court, from the evidence, was also of the opinion that the man was physically and mentally incapable of managing his property, and it ordered the appointment of a general guardian to manage the estate and to have custody of the person.

From this decision an appeal was made to the Supreme Court for relief. The appellate court agreed as to the need for a guardian to handle and manage the estate, but disaffirmed the order for a personal guardian, and so ordered. The following reason for the above decision was given: "Where an alleged incompetent, although not capable of handling his business affairs, appeared to be sufficiently in possession of his faculties so that no urgent reason existed for restricting his right of liberty, his tastes, and daily prac-

tices ought not to be encroached on by placing his person in the custody of a guardian."

In North Carolina, the appointment of a guardian is a judicial procedure in which the clerk of the superior court has jurisdiction. Guardians may be appointed when necessary for infants, idiots, lunatics, inebriates, and inmates of the Caswell Training School. Guardianships may be special or general, and in certain instances the clerk may commit the tuition and custody of the individual to one person and the charge of his estate to another.

Doctors frequently have patients whom they feel are capable of making a social adjustment in the community, and of assuming minor responsibilities. These same patients may not have sufficient mental capacity to enter into contractual relationships and to manage their business affairs. It should be consoling to the physician to know that he can recommend guardianship for such a patient without having him restricted as to his person.

(Wisconsin Supreme Court, January, 1942. Vol. 1, Northwestern Reporter, p. 873.)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

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No. 4

IT IS well to be reminded how great a contribution tuberculosis-conscious physicians can make to preventive measures against tuberculosis in the discharge of the ordinary duties of a general practice. As it becomes more generally recognized that any patient who consults a physician for any reason may be a case of tuberculosis a long step will have been taken toward the final eradication of the disease.

CASE-FINDING

Modern case-finding is without doubt one of the chief factors in the battle against tuberculosis. It began with emphasis upon contact examinations and extended to mass community-case-finding techniques. Now roentgen technique, particularly as exemplified by the miniature film, is in danger of crowding out other important diagnostic measures, notably tuberculin testing.

Nevertheless there are enormous difficulties in the way of procuring periodic chest films for everybody. Expense is one thing; personnel is another. Cooperation on the part of the public, while less tangible, is not to be ignored. As an experiment, total community surveys have been made and are now being undertaken by the Tuberculosis Division of the United States Public Health Service. Meanwhile it

would seem that other efforts, which attempt to focus roentgen case-finding technique, should not be neglected.

Fortunately it has long been recognized that tuberculosis is distributed in more or less well-defined patterns. It is more prevalent among the underprivileged; and therefore, in groups whose housing and nutrition are bad. There is evidence that other not well understood biological factors may also play an important role in morbidity and mortality characteristics. Numerous observations suggest that these factors are extremely subtle in their action. Among these may be mentioned the fact that the Chinese of San Francisco have a death rate from tuberculosis between three and four times that of the white population, while the Japanese of the same city, in the year before World War II, had a death rate less than that of the white population. Among the white population the death rate increases in inverse ratio to economic status. Case-finding studies, therefore, yield rich returns when directed toward special population groups, with a high incidence of tuberculosis.

Recently it has been recognized that general hospitals and clinics normally operate as concentrating mechanisms for cases of tuberculosis. Less consideration has been given the offices of the general medical practitioners. A pilot study by Dr. Albert C. Daniels, then in private practice in California, suggests that an alert general practitioner can contribute measurably to the solution of the tuberculosis problem in his community. While the figures are small they are nonetheless suggestive. Between October, 1941 and April, 1942, Doctor Daniels routinely fluoroscoped 250 patients. This included all new patients who passed through his office during this period. Films were taken of all patients who showed suspicious findings on fluoroscopy. Seven active cases of pulmonary tuberculosis were discovered in this group of 250 patients, a prevalence of 2.8 per cent. They varied in age from 18 to 57. None gave a history of close contact. Only one suspected that he might have tuberculosis; only one had physical signs suggestive of pulmonary disease.

In the seven previous years of general practice, Daniels had discovered only five active cases of pulmonary tuberculosis. Other physicians of the community, queried by Daniels, had discovered one or two active cases of pulmonary tuberculosis a year. Nevertheless, in this community, statistics suggest that approximately 30 per cent of the general population consult some physician during the year for some complaint.

Daniels assumed at this time that the prevalence of clinically significant tuberculosis in the population at large in his community was one per cent. This would have meant that there were approximately 500 cases existing in the county. If the prevalence of 2.8 per cent of active cases in his practice was generally applicable to other doctors' offices, then in the 15,000 patients who consulted doctors there should have been about 400 cases of tuberculosis, or about four-fifths of the active disease in the community. It is at once suggested that a modern case-finding program carried out by general practitioners by any recognized roentgen technique would go a long way toward the solution of the local tuberculosis problem.

If it is recognized that clinics, general hospitals and doctors' offices represent great natural sieves for the collection of tuberculous individuals, there is present here an extremely economical method of attack.

It would seem that the general practitioners' offices are the great neglected field for case-finding

and may prove to be one of the most economical and satisfactory places for further effort. The crux of the matter lies in establishing cooperation between tuberculosis associations, the Public Health Services and organized medicine. This may seem a difficult task, yet its full accomplishment would draw into active cooperation in the antituberculosis movement every general practitioner of medicine in the United States.

A serious weakness in many case-finding techniques has been their inclusion of such a large part of the healthy segment of the population. Preliminary figures derived from 350,000 miniature films taken in California during the past year reveal a prevalence of only about half of one per cent or about one-sixth of the Daniels figure. A further weakness is the periodicity of these techniques. Hospitals, clinics and physicians' offices furnish a constantly functioning service that should not be neglected.

Case-Finding, Sidney J. Shipman, M.D., Editorial, *The American Review of Tuberculosis*, December, 1947.

PUBLIC RELATIONS

PUBLIC RELATIONS PROGRAMS OF STATE MEDICAL SOCIETIES

Preachers do not often get on the front cover of *Time Magazine*, as did Dr. Reinhold Niebuhr in the March 7 issue. A few Sundays ago I had the privilege of hearing Dr. Niebuhr fill the pulpit of The Memorial Church of Harvard University. During the course of his sermon, he made this statement:

"When monarchy tried to maintain its old forms, it died. Where it sought rebirth to conform with oncoming democratic ideals, it lived. Democracy must shed its dead-self portions or it will not live."

The same can be said of free medicine. We must change our thinking and doing to meet today's demands—or regimented medicine, made strong by public approval, will seize our precious throne.

The American Medical Association and its constituent state medical associations recognize this truth. The American Medical Association is stepping up the tempo of its 10-point health program and general public relations program. A progress report delivered at the Interim Session held at Cleveland in January shows that if the medical profession continues its earnest effort to improve public relations, a health product will be produced that will outsell any creation the government can possibly devise. But talk must be replaced by action on every point. And action must be maintained until this full-rounded health job is finished.

Fortunately, state medical associations are not sitting apathetically by, waiting for George A.M.A. to effect this 10-point health program and overall public relations program unaided. Both the national association and the constituent associations are working most cooperatively together on this common objective.

Too much emphasis cannot be given to the principle that the public relations tasks of the medical profession must be implemented and performed primarily within the framework of active state and county public relations programs. The democratic nature of the organization of the American Medical Association is probably unparalleled. The practice and power of medicine remain basically in the hands of the local doctor and, by his freely granted consent, in the county and state societies.

Furthermore, it is in the doctor's office and in the county medical society's community area that most of the public relations needs and opportunities arise. It is here that the members of the society meet and decide public policies and plan and carry out public activities. Here they join other health organizations in effecting common health objectives. Here they achieve their miracles in research, in operative techniques, in curative drugs, and in lives saved and health restored. Here they are approached by representatives of the press and of the radio to give out facts and make comment. Here the invitations are waiting to address luncheon clubs, civic groups, women's groups, and other gatherings.

Here, too, is the place where rebating will have to be eliminated, where procedures for answering night calls will have to be set up, where means will have to be found for reducing waiting time in offices. In this area will come the solution to enable the citizens of the community to pay conveniently for complete medical care. Here is where the postgraduate education will take effect and medical care will be extended to rural areas.

State societies can be of tremendous assistance in bringing these public relations dreams into realities. A public relations survey conducted recently by the American Medical Association among constituent state societies shows that, of thirty-three replying states, twenty-nine are aiding and stimulating county societies in their public rela-

tions programs. As replies come in from remaining states, they will no doubt increase the number of state societies conducting specific statewide medical public relations programs.

States with active public relations programs are spending for the most part amounts which run between \$12,000 and \$35,000 per year. Channels of public relations information used by state societies vary considerably, with the exception of newspapers, radio, and speakers' bureaus. Twenty-six states utilize newspapers; twenty-two states work with radio; and twelve states have functioning speakers' bureaus. Literature, magazines, health films, medical meetings, and county meetings are employed by five states; advertising by four states; news letters and other health groups by three states; and legislative contacts, public relations conferences, and exhibits by two states. One state each uses voluntary health insurance week, schools, and a package library.

The question was asked of state societies: "What do you consider are your first five public relations objectives?" The answers received were as different as the twenty-nine states that sent them back.

"Promote medical prepayment plan" got the vote of nine states. "Improve medical care in rural areas" was listed by five states. "Develop press and radio relations," "Participation of society committees in public relations programs," and "Encourage better patient-physician relationship" were named by four states.

Three states put down "Arrange for 24-hour medical service for public," "Encourage participation of physicians in prepayment plan," "Educate physician as to value of public relations," "Improve professional relations with public," "Develop legislative activity," "Educate public about socialized medicine," "Correct unethical doctors," and "Educate public about the high cost of medical care, hospital care, drugs, and nursing care."

Two states listed "Convince public that society is interested in their health and welfare," "Get information to physicians about services available to them," "Aid county society to be effective in own areas," "Convince doctor he must participate," "Employ

field secretary to work with county societies," "Further relations with community groups," and "Assist in establishing health councils." Twenty-three other miscellaneous medical public relations objectives were listed by single states.

A definite advance in the field of medical public relations would be made if more uniform and common-denominator objectives would be agreed upon by the various states. The American Medical Association offers its assistance and services towards this end.

L. W. REMBER,
Executive Assistant,
American Medical Association

CORRESPONDENCE

To the Editor:

As Dr. Frank Richardson in his interesting contribution to the March number of the JOURNAL—"Laboratory Services for the Private Practitioner"—asks for suggestions from readers, may I offer the following:

In twenty-two years' association with an outstanding medical technologist, Max Riesenbergh, who systematizes his work in such a manner that he accomplishes the equivalent of the work of any three technicians, I have often noted that the only disturbing factor is being hounded by physicians who refer their tests, for immediate reports. As accuracy depends upon quiet concentration and sufficient time for thoroughness, such physicians should realize that nagging without realization of the time required only postpones the rendering of their reports.

Thanking you for the publication of this comment if you deem it suitable, I am

Very sincerely yours
Karl Schäffle, M.D.
Asheville

Winthrop-Stearns Has "Procaine Penicillin"

New improved penicillin, called "Procaine Penicillin," is now available through Winthrop-Stearns, Inc.

Company literature describes it as "a suspension of crystalline procaine penicillin G in sesame oil." After intramuscular injection, it forms a depot from which the penicillin is slowly released to the body. Hence, a small injection of only 1 cc. daily is generally sufficient instead of an injection every three hours as required with aqueous solutions.

It is available in 10-cc. vials, containing ten doses of 1 cc. each. There are 300,000 units in 1 cc.

BULLETIN BOARD

MINUTES OF EXECUTIVE COMMITTEE MEETING

February 8, 1948

The Executive Committee of the Medical Society of the State of North Carolina met at 11 a.m. on Sunday, February 8, at The Carolina Hotel, Pinehurst.

The following were present:

Officers:

Dr. J. F. Robertson, President, Wilmington
Dr. V. K. Hart, first vice president, Charlotte
Dr. Roscoe D. McMillan, secretary-treasurer, Red Springs

Councilors:

Dr. John Cotten Tayloe, Washington, Second District
Dr. Donald B. Koonce, Wilmington, Third District
Dr. Newsom P. Battle, Rocky Mount, Fourth District
Dr. M. D. Hill, Raleigh, Sixth District
Dr. James H. McNeill, North Wilkesboro, Eighth District

Present by Proxy:

Dr. Irving E. Shafer, Salisbury, Ninth District
Dr. Donald M. McIntosh, Old Fort, Tenth District

Finance Committee:

Dr. V. M. Hicks, chairman, Raleigh
Dr. Robert J. Reeves, Durham
Dr. Wayne J. Benton, Greensboro

Mr. James T. Barnes, executive secretary, was also present.

President Robertson stated that the meeting had been called to consider the best means of dealing with unethical practices in the medical profession, particularly the practices of fee-splitting and accepting "kick-backs" on prescriptions, glasses, and laboratory work. He cited several examples of such practices going on in the state, and asked for discussion on the subject. After considerable discussion, Dr. Hart presented the following resolution:

"Whereas, most unfavorable national publicity has been given in current periodicals relative to the so-called 'kickback' from the optical companies to oculists, and

"Whereas, we believe this ethically wrong in that every transaction between doctor and patient should be direct with no hidden factor, and

"Whereas, this matter is destined within our own and other states to receive further investigation on the part of the federal government, and

"Whereas, such investigation with its inevitable publicity will only make worse already bad public relations of the medical profession and thereby further the cause of socialized medicine;

"Be it resolved by the Executive Committee of the North Carolina Medical Society that this committee disapprove of all such rebates and that all North Carolina ophthalmologists who are receiving such rebates be urged to discontinue such acceptance as soon as possible, with a concomitant raise in their charge for professional services and with glasses listed only at cost to the patient, and

"Be it further resolved that a copy of this resolution be sent to the secretary of the North Carolina Eye, Ear, Nose and Throat Society with a request that a copy be placed in the hands of its officials and all members practicing ophthalmology, and

"Be it further resolved that the Executive Committee of the North Carolina Medical Society dis-

approves of any form or type of rebate in any related branch of medicine or surgery."

Dr. Tayloe seconded the resolution, and Dr. Koonce offered the following amendment: "We are wholeheartedly opposed to any rebates in any form." After more discussion, the amended resolution was passed. Dr. McNeill then moved that each councilor give a report to the component societies in his district on the action taken and recommendations made at this meeting, and on the Executive Committee's disposition toward these questionable practices of ethics. Dr. Hart seconded this motion, and it was passed.

Dr. Hicks, chairman of the Finance Committee, reported that there was a deficit of \$152.78 in the operation of the Society during 1947, as compared to a net gain in 1946 of about \$10,000.00, and added that the proposed budget of \$56,237.80 for 1948 will cause an operating deficit of \$14,896.07. The suggested revenue budget for 1949, which calls for membership dues of \$25.00, will raise the receipts to \$72,565.50.

Dr. Benton questioned the necessity of raising the dues to \$25.00, since the budget for 1948 calls for expenditures of only \$56,237.80, whereas the estimate suggested for 1949 indicates receipts as \$72,565.50. Dr. Hicks replied that one of the reasons was the deficit on which the Society would operate in 1948, and Dr. Hart stated that the Society must have a good reserve in order to meet such emergencies as lawsuits.

Dr. McMillan then read a letter from Dr. Frank Lox, chairman of the Committee on Maternal Welfare, presenting this committee's budget. On motion made by Dr. Hill and seconded by Dr. McNeill the budget was accepted.

Dr. Battle brought up some questions concerning the merger of the Hospital Saving and Hospital Care Associations. These were discussed, but no action was taken.

Dr. Hart, chairman of the Committee on Prepayment Medical Service Fees, reported that another meeting of the committee would be held on February 29 to discuss the fee schedule proposed to give complete coverage to individuals in the lower economic groups, with incomes not in excess of \$3000 for a family group, \$2500 for a couple, and \$2000 for an individual.

Secretary McMillan then read a letter which Dr. Hart had written President Robertson, as follows:

"I am more than ever worried about the danger of compulsory health insurance. I am worried, also, about the indifference of the average doctor.

"There is little question that this would be a national calamity both for the profession and the public. Its implications are little appreciated by many, whether professional or lay people.

"If such a gigantic bureau were once established, employing at least five hundred thousand people, according to estimates, and spending sums estimated anywhere from four to twelve billion dollars a year, our present form of government is a thing of the past.

"I shall be one of the first to admit sins of commission and omission on the part of the medical profession, but this bill is not the answer to those sins.

"In short, I am writing you as president of the State Society and posing this question: Since President Truman has come out flat-footedly endorsing

compulsory health insurance, is it not proper for the Executive Committee to pass a strong resolution condemning the same and giving it proper publicity? More than that, I think we should see that every doctor in this state is contacted and urged to write to his local congressman and ask him to oppose this communistic bill."

The following resolution proposed by Dr. Hart was then read:

"Whereas, the President of the United States has unequivocally advocated compulsory health insurance; and,

"Whereas, A great amount of propaganda advocating socialized medicine has originated in the Social Security Board; and,

"Whereas, Such a practice of medicine is contrary to constitutional and traditional concepts of individual freedom; and,

"Whereas, The establishment of such a system would create another tremendous federal bureaucracy employing at least several hundred thousand employees; and,

"Whereas, Such a system would be a long step toward complete regimentation of our people; and,

"Whereas, such a system would inevitably produce an inferior caliber of medicine as evidenced by those countries in which it has been tried; and,

"Whereas, American medicine under our present system leads the world today; and,

"Whereas, Much of the propaganda that has been put out is completely false and misleading; and,

"Whereas, We feel sure that any improvement in medical care must be settled on a state basis rather than a national basis, due to wide variation in local conditions and needs;

"BE IT RESOLVED by the Executive Committee of the North Carolina State Medical Society that said Committee formally assembled entirely disapproves, without any reservations, of national compulsory health insurance as detrimental to both the interests of the patient and doctor and also as detrimental to the public welfare.

"BE IT FURTHER RESOLVED, That the action of this Committee be made known to the members of the State Medical Society at large and to the public."

Dr. Benton asked if adoption of the resolution could be construed as lobbying and if it would have any consequences as to the tax exemption on the income of medical organizations. Dr. Battle moved that the resolution as presented be accepted, with the understanding that it be released only after securing a legal opinion that it does not involve the Society in respect to any existing laws concerning tax exemption. Dr. McNeill seconded the motion, and it was carried.

Dr. Koonce reported that \$2500 had been contributed to the McCain Memorial Fund, and asked what disposition should be made of it. It was the consensus that President Robertson should appoint a committee to work with Mrs. McCain in deciding the matter.

On motion, duly made and seconded, the meeting was adjourned at 4:45 p.m.

NINETY-FOURTH ANNUAL SESSION
THE MEDICAL SOCIETY
OF THE STATE OF NORTH CAROLINA

May 3, 4 and 5, 1948

PINEHURST, NORTH CAROLINA

THEME FOR 1948

Develop a working partnership between
organized medicine and every physician
in North Carolina

In order that the dignity and honor of the medical profession may be upheld, its standards exalted, its sphere of usefulness extended, and the advancement of medical science promoted, a physician should associate himself with medical societies and contribute his time, energy, and means in order that these societies may represent the ideals of the profession.

—Ch. II, Sec. 2, Principles of Medical Ethics
of the
American Medical Association

HEADQUARTERS, HOTEL CAROLINA

American Plan

Rates

Hotel Carolina:

Single Rooms\$12.00

Double Rooms\$22.00

Plus 10% for gratuities

Holly Inn:

\$11.00 per day, per person, including 3 meals per day. Allowance for Banquet and Ladies' Luncheon at Country Club, only.

Pinecrest Inn:

\$5.00 per person, per day. No meals will be served.

Berkshire Inn:

\$16.00 per day for two persons.

\$ 9.00 per day, 1 person

Including 3 meals a day. No meal allowances made.

Manor Inn:

\$5.00 per day, per person.

No meals will be served.

OFFICIAL CALL

According to the By-Laws, as amended at the 1940 Session, the House of Delegates will convene at Pinehurst, N. C., in the Ball Room of the Carolina Hotel, Monday afternoon, May 3, 1948, at 2:00 o'clock.

James F. Robertson, M.D., President.

Attest:

Roscoe D. McMillan, M.D., Secretary-Treasurer.

REGISTER PROMPTLY

Members of the State Medical Society, of the Auxiliary, and all visitors are requested to register promptly at the Registration Desk located in the Exhibitors' Tent which is situated on the left of West Parlor, Carolina Hotel, Pinehurst. Please present membership card when you register.

Registrations in charge of—

Miss Annie Williams Red Springs

Miss Catherine Johnson Winston-Salem

Miss Mary Lou Stack Red Springs

Mrs. Grady Covington McCain

EXHIBIT ATTENDANCE PRIZE AWARD

Every physician may obtain several opportunities at an award of a series of attendance prizes by visiting each of the technical display booths located in the exhibit area. Visit the booth and secure your numbered opportunity, a stub from which will be deposited for the public drawing and the awards to be made Wednesday, May 5, at 11:45 o'clock A. M. in the exhibit area.

GRAND PRIZE

Through the cooperation of Nash-Steele-Martin, General Electric Distributors for North Carolina, concessions have been obtained in securing an ELECTRIC REFRIGERATOR which is offered as the GRAND PRIZE for attendance of physicians at the EXHIBITS of the 94th Annual Session. Note that other prizes will be offered for such attendance.

IMPORTANT

Each essayist is requested (see By-Laws) to hand to the Chairman, following the reading of his paper, an original copy, together with any illustrations or other material used with the paper. Those desiring to review their papers before publication should make a carbon copy for such purposes. All papers should be typewritten and double spaced, with references arranged according to the form used in publications of the American Medical Association. The cost of cuts, in excess of \$20.00, will be charged to the author.

BY-LAWS, CHAPTER III, SECTION 4

No address or paper before the Society except that of the President shall occupy more than fifteen minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject; provided that the terms of this section shall not apply to invited guests.

RESUME OF PROGRAM

SUNDAY, MAY 2, 1948

- 11:00 A.M.—Meeting of Officers and Directors of North Carolina Branch of American Academy of General Practice (Theater)
 3:00 P.M.—North Carolina Branch of American Academy of General Practice (Theater)

MONDAY, MAY 3, 1948

- 9:00 A.M.—Registration Booth Opens
 2:00 P.M.—House of Delegates of Medical Society (Ball Room)
 5:30 P.M.—Intermission, House of Delegates of Medical Society
 6:00 P.M.—Medical College of Virginia Alumni Dinner (Crystal Room)
 6:00 P.M.—Dermatologists, Society of, Dinner (Stag Room)
 8:00 P.M.—House of Delegates of Medical Society Reconvenes
 8:30 P.M.—Bingo Party, Auxiliary to Medical Society (Pine Room)

TUESDAY, MAY 4, 1948

- 7:30 A.M.—Officers' Breakfast (Crystal Room)
 8:00 A.M.—Registration Booth Opens
 9:00 A.M.—Executive Board Meeting, Auxiliary to Medical Society (Pine Room)
 9:15 A.M.—First General Session of Medical Society (Ball Room)
 10:30 A.M.—Annual Meeting, Auxiliary to the Medical Society (Pine Room)
 1:00 P.M.—Silver Anniversary Luncheon, Auxiliary to Medical Society (Pinehurst Country Club)
 —Wake Forest Alumni Luncheon (Crystal Room)
 —Duke University Medical Alumni Luncheon (Stag Room)
 —University of North Carolina Medical Alumni Luncheon (East End of Dining Room)
 1:00 P.M.—Western N. C. Branch of American Medical Women's Association Luncheon. See Dr. S. Weizenblatt for place.
 2:30 P.M.—Section Meetings, Medical Society:
 Section on Surgery (Ball Room)
 Section on Practice of Medicine (Large Card Room)
 Section on Gynecology and Obstetrics (Theater)
 Section on Public Health and Education (Pine Room)
 Section on Neurology and Psychiatry (Dutch Room)
 4:00 P.M.—Tea, Auxiliary to Medical Society (West Parlor), honoring Mrs. W. Reece Berryhill. President: Mrs. Raymond Thompson, President-Elect: Mrs. James F. Robertson, wife of the President of Medical Society; Past Presidents
 7:00 P.M.—President's Dinner (Main Dining Room)
 7:45 P.M.—Presentation of President James F. Robertson, M.D.
 Presentation of Guests
 7:55 P.M.—The Medical Care Program in North Carolina
 —Mr. James H. Clark, Chairman, North Carolina Medical Care Commission, Elizabethtown
 8:15 P.M.—Presentation of Golf Tournament Prizes
 8:25 P.M.—Humorous and Inspirational Address
 —Mr. James E. Gheen, New York
 10:00 P.M.—President's Ball (Ball Room)

WEDNESDAY, MAY 5, 1948

- 8:00 A.M.—Registration Booth Opens
 9:00 A.M.—Second General Session of Medical Society (Ball Room)
 10:00 A.M.—Bridge Party, Auxiliary to Medical Society (Large Card Room)
 10:00 A.M.—Professional Advisory Committee, North Carolina State Blind Commission (Small Card Room)
 11:45 A.M.—Awarding of prizes (Exhibit Area)
 12:00 Noon—Conjoint Session (Ball Room)
 1:00 P.M.—University of Pennsylvania Medical Alumni Luncheon (Stag Room)
 —Jefferson Medical College Alumni Luncheon (Crystal Room)
 —Tulane Medical College Alumni Luncheon (East End of Dining Room)
 2:30 P.M.—Second Meeting House of Delegates (Small Card Room)
 2:30 P.M.—Section Meetings, Medical Society:
 Section on General Practice of Medicine and Surgery (Ball Room)
 Section on Pediatrics (Large Card Room)
 Section on Ophthalmology and Otolaryngology (Pine Room)
 Section on Radiology (Dutch Room)
 5:00 P.M.—Third General Session, Medical Society (Ball Room)

PROGRAM OF THE MEDICAL SOCIETY

MONDAY, MAY 3, 1948

- 9:00 A.M.—Registration Booth Opens
 2:00 P.M.—First Meeting of House of Delegates (Ball Room)
 Invocation—Reverend Thomas A. Fry, Pastor Presbyterian Church, Red Springs, N. C.
 Intermission, 5:30 P.M. to 8:00 P.M.
 6:00 P.M.—Medical College of Virginia Alumni Dinner (Crystal Room)
 6:00 P.M.—Dermatologists, Society of, Dinner (Stag Room)

- 8:00 P.M.—House of Delegates Reconvenes (Ball Room)

TUESDAY, MAY 4, 1948

- 7:30 A.M.—Officers' Breakfast (Crystal Room)
 Panel Discussion on Medical Organization Problems—Roscoe D. McMillan, M.D., Moderator
 (1) Professional Relations Problem
 8:00 A.M.—The Doctor and the Medical Society
 C. F. Strosnider, M.D., Goldsboro
 (2) Medical Service Problem
 8:20 A.M.—Distribution of Medical Care-Prepayment Plans—V. K. Hart, M.D., Charlotte
 (3) Public Relations Problem
 8:40 A.M.—The Doctor, The Patient, and The Public—Donald B. Koonce, M.D., Wilmington
 9:00 A.M.—Adjournment
 8:00 A.M.—Registration Booth Opens

FIRST GENERAL SESSION
(Ball Room)

Tuesday, May 4, 1948

- 9:15 A.M.—Call to Order, Roscoe D. McMillan, M.D., Chairman Committee on Arrangements
 Invocation
 Announcements
 Presentation of President James F. Robertson, M.D.
 9:20 A.M.—Report of Committee on Award of Moore County Medal:
 F. B. Marsh, M.D., Chairman, Salisbury
 C. T. Smith, M.D., Rocky Mount
 Robert L. McMillan, M.D., Winston-Salem
 Robert M. McMillan, M.D., Southern Pines
 9:30 A.M.—Report of Obituary Committee:
 A. A. James, M.D., Chairman, Sanford
 C. R. Monroe, M.D., Pinehurst
 M. D. Bonner, M.D., Jamestown

In Memoriam, President Frank A. Sharpe, M. D.

—by—

Donald B. Koonce, M.D., Wilmington

9:45 A.M.—The Control of Electrolyte and Water Balance in Surgical Patients—William A. Wolff, Ph.D., Winston-Salem (From Section on Surgery)

10:05 A.M.—Report of Progress of the Maternal Welfare Committee — Frank R. Lock, M.D., Winston-Salem (From Section on Gynecology and Obstetrics)

10:25 A.M.—Atomic Warfare and Medicine—R. E. Lapp, Ph.D. (by invitation), Executive Director, Committee on Atomic Energy, Research and Development Board, Washington, D. C.

11:05 A.M.—Subject unannounced—J. deJ. Pemberton, M.D. (by invitation), Surgeon, Mayo Clinic, Professor of Surgery, The Mayo Foundation, Rochester, Minnesota

11:45 A.M.—The Place of BCG Vaccination in the Tuberculosis Program—H. S. Willis, M.D., Superintendent North Carolina State Sanatorium, McCain (Section on Public Health and Education)

12:05 P.M.—Physical Methods of Treatment in Psychiatry—William Sargent, M.D., Durham (From Section on Neurology and Psychiatry)

12:25 P.M.—Adjournment

ALUMNI LUNCHEONS

Tuesday, May 4, 1:00 P.M.

Wake Forest—Felda Hightower, M.D., President, Winston-Salem

(Crystal Room)

Duke University—Eleanor B. Easley, M.D., President, Durham

(Stag Room)

University of North Carolina—Arthur H. London, Jr., M.D., President, Durham

(East End of Dining Room)

SECTION ON SURGERY

(Ball Room)

Tuesday, May 4, 2:30 P.M.

H. H. Bradshaw, M.D., Winston-Salem, Chairman
Nephro-Ureterectomy, Indication and Illustrated Cases.

Hamilton W. McKay, M.D., and H. Haynes Baird, M.D., Charlotte

Discussion opened by Fred Garvey, M.D., Winston-Salem

Carcinoma of the Breast.

Russell O. Lyday, M.D., Greensboro

Discussion opened by B. E. Rhudy, M.D., Greensboro

Complications of Pott's Fracture.

Lenox D. Baker, M.D., Durham

Discussion opened by M. A. Pittman, M.D., Wilson

Pentothal, Nitrous Oxide-Oxygen Curare Anesthesia.

John C. Montgomery, M.D., Charlotte

Discussion opened by Roscoe L. Wall, M.D., Winston-Salem

Surgical Management of Present Day Empyema.

W. Paul Sanger, M.D., Charlotte

Discussion opened by Clarence E. Gardner, M.D., Durham

The Control of Electrolyte and Water Balance in Surgical Patients.

William A. Wolff, Ph.D., Winston-Salem

(Before First General Session, Tuesday, May 4)

SECTION ON PRACTICE OF MEDICINE

(Large Card Room)

Tuesday, May 4, 2:30 P.M.

Julian M. Ruffin, M.D., Durham, Chairman
Hypoglycemia in Diabetes Mellitus.

Charles W. Styron, M.D., Raleigh

Discussion opened by E. D. Peasley, M.D., Asheville

A Clinical Evaluation of Gastro-Intestinal Signs and Symptoms in Patients with Recent Myocardial Infarction.

David Cayer, M.D., Winston-Salem.

Discussion opened by Colin A. Monroe, M.D., Charlotte

Physiological Factors in Fatigue.

A. T. Miller, M.D., Chapel Hill

Discussion opened by John H. Ferguson, M.D., Chapel Hill

Panel Discussion on Peptic Ulcer.

Julian M. Ruffin, M.D., Moderator

Medicine—Walter R. Johnson, M.D., Asheville
Surgery—Howard H. Bradshaw, M.D., Winston-Salem

X-Ray—Allan Tuggle, M.D., Charlotte

Psychiatry—M. H. Greenhill, M.D., Durham

SECTION ON GYNECOLOGY AND OBSTETRICS

(Theater)

Tuesday, May 4, 2:30 P.M.

T. D. Tyson, M.D., High Point, Chairman

Panel Discussion on Obstetrical Hemorrhage.

Oren Moore, M.D., Charlotte, Moderator

Etiology and Diagnosis of Placenta Praevia.

W. Reed Wood, M.D., Greensboro

Treatment of Placenta Praevia.

C. H. Mauzy, M.D., Winston-Salem

Etiology and Diagnosis of Premature Separation of Placenta.

Eleanor B. Easley, M.D., Durham

Treatment of Premature Separation of Placenta.

W. L. Thomas, M.D., Durham

Antepartum and Postpartum Bleeding from Standpoint of General Practitioner.

J. Street Brewer, M.D., Roseboro

Postpartum Hemorrhage per Se.

Lance T. Monroe, M.D., Concord

Report of Progress of the Maternal Welfare Committee.

Frank R. Lock, M.D., Winston-Salem

(Before First General Session, Tuesday, May 4.)

SECTION ON PUBLIC HEALTH AND EDUCATION (Pine Room)

Tuesday, May 4, at 2:30 P.M.

Robert F. Young, M.D., Halifax, Chairman

Vaginal Smears in the Diagnosis of Uterine Carcinoma.

John R. Kernodle, M.D., Durham

Discussion opened by Ivan M. Procter, M.D., Raleigh

Experiences of the Greensboro Tumor Clinic.

F. K. Harder, M.D., Greensboro

Discussion opened by M. B. Bethel, M.D., Charlotte

Recent Trends in Laboratory Procedures.

John H. Hamilton, M.D., Raleigh

Discussion opened by R. E. Fox, M.D., Raleigh

The Place of BCG Vaccination in the Tuberculosis Program.

H. S. Willis, M.D., Superintendent

North Carolina State Sanatorium

McCain, N. C.

(Before First General Session, Tuesday, May 4)

A Photofluorogram of Tuberculosis Control in the North Carolina State Board of Health.

T. F. Vestal, M.D., Winston-Salem

Discussion opened by E. H. Ellinwood, M.D., Newton

SECTION ON NEUROLOGY AND PSYCHIATRY

(Dutch Room)

Tuesday, May 4, 2:30 P.M.

Lloyd J. Thompson, M.D., Winston-Salem,
Chairman

I. Prefrontal Lobotomy.

Use of Prefrontal Lobotomy in the Treatment of Intractable Pain.

Guy L. Odom, M.D.

R. Burke Suitt, M.D.,
Durham

Psychological Studies of Prefrontal Lobotomy Patients.

Joseph E. Grassi, A.M. (by invitation)
Winston-Salem

General Discussion of Prefrontal Lobotomy.

Everett O. Jeffreys, M.D.,
Winston-Salem

II. Headache.

Clinical Considerations of Headache.

Joseph B. Stevens, M.D., Greensboro

Physiology and Pharmacology of Headache.

Harold D. Green, M.D., Winston-Salem

Characteristics of Headache in Anxiety and Hysterical Reaction.

Lloyd J. Thompson, M.D., Winston-Salem

Physical Methods of Treatment in Psychiatry.

William Sargent, M.D., Durham

(Before First General Session, May 4)

PRESIDENT'S NIGHT

(Main Dining Room)

Tuesday, May 4, 1948

(Dress—Optional)

7:00 P.M.—Banquet

Oren Moore, M.D., Toastmaster
Charlotte

Invocation

7:45 P.M.—Presentation of President James F. Robertson, M.D.

Presentation of Guests

7:55 P.M.—The Medical Care Program in North Carolina

Mr. James H. Clark, Chairman

North Carolina Medical Care
Commission

Elizabethtown, N. C.

8:15 P.M.—Presentation of Golf Tournament Prizes

8:25 P.M.—Humorous and Inspirational Address
Mr. James E. Gheen, New York

9:10 P.M.—Adjournment

10:00 P.M.—President's Ball

Bill Allen and his Orchestra
(Ball Room)

WEDNESDAY, MAY 5, 1948

8:00 A.M.—Registration Booth Opens

SECOND GENERAL SESSION

(Ball Room)

Wednesday, May 5, 1948

9:00 A.M.—Acute Poisoning in Children.

Jay M. Arena, M.D., Durham
(From Section on Pediatrics)

9:20 A.M.—Carcinoma of the Stomach.

Robert J. Reeves, M.D., Durham
(From Section on Radiology)

9:40 A.M.—External Diseases of the Eye—
Motion Picture.

D. S. Currie, Jr., M.D.,
Duke Hospital, Durham

(From Section on Ophthalmology and
Otolaryngology)

10:00 A.M.—The Need for and Recognition of the
General Practitioner.

Wingate M. Johnson, M.D.,
Winston-Salem

(From Section on Practice of Medicine
and Surgery)

10:20 A.M.—The Treatment of Anemia.

Russel L. Haden, M.D. (by invitation)
Cleveland Clinic
Cleveland, Ohio

11:00 A.M.—The Pathogenesis, Diagnosis and
Treatment of the Acute Phase of
Poliomyelitis.

William F. Friedewald, M.D.
(by invitation)

Chairman, Department of Bacteriology
Emory University School of Medicine
Atlanta, Ga.

11:30 A.M.—Presenting Winner of 1948 High School Essay sponsored by the Public Relations Committee.
Donald B. Koonce, M.D.
Chairman, Public Relations Committee
Wilmington

11:40 A.M.—Election of three members of the Editorial Board

11:45 A.M.—Awarding of Prizes
(Exhibit Area)

CONJOINT SESSION

(Ball Room)

Wednesday, May 5, 12:00 Noon

S. D. Craig, M.D., Winston-Salem, President of the State Board of Health, will preside over this meeting of the Medical Society of the State of North Carolina and the State Board of Health.

ALUMNI LUNCHEONS

Wednesday, May 5, 1:00 P.M.

University of Pennsylvania—Harry L. Brockmann, M.D., President, High Point (Stag Room)

Jefferson Medical College—Isaac E. Harris, Jr., M.D., President, Durham (Crystal Room)

Tulane Medical College—L. A. Crowell, Jr., M.D., President, Lincolnton (East End of Dining Room)

2:30 P.M.—Second Meeting of House of Delegates
(Small Card Room)

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY

(Ball Room)

Wednesday, May 5, 2:30 P.M.

Panel Discussion on The General Practitioner
G. O. Moss, M.D., Cliffside, Chairman

Problems of Rural Practice

George F. Bond, M.D., Bat Cave

The Role of the General Practitioner in a Program of Adequate Medical Care

J. Street Brewer, M.D., Roseboro

Advantages of Membership in the American Academy of General Practice

Forrest M. Houser, M.D., Cherryville

The Need for and Recognition of the General Practitioner

Wingate M. Johnson, M.D.

Winston-Salem

(Before Second General Session, May 5)

The Sad Plight of the General Practitioner
G. O. Moss, M.D., Cliffside

SECTION ON PEDIATRICS

(Large Card Room)

Wednesday, May 5, 2:30 P.M.

Frederick B. Haar, M.D., Greenville, Chairman

Acute Poisoning in Children.

Jay M. Arena, M.D., Durham

(Before Second General Session, Wednesday, May 5)

Psychiatric Factors in Children with Protracted Illness.

George A. Watson, M.D., Durham

Technique of Breast Feeding.

Frank Howard Richardson, M.D., Asheville

Ratbite Fever.

Carlton G. Watkins, M.D., Charlotte

The Acute Abdomen in Infancy.

William H. Breeden, M.D., Fayetteville

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

(Pine Room)

Wednesday, May 5, 1948

W. P. Speas, M.D., Winston-Salem, Chairman

James A. Harrill, M.D., Winston-Salem, Secretary

Lingual Thyroid.

A. A. Dorenbusch, M.D., Charlotte

Selected Neuro-Ophthalmological Disorders.

Henry C. Smith, M.D.

Professor of Ophthalmology

Vanderbilt University

Nashville, Tenn.

Woodman Operation for the Treatment of Bilateral Recurrent Nerve Paralysis—Motion Picture.

Fletcher D. Woodward, M.D.

Professor of Otolaryngology

University of Virginia

Charlottesville, Va.

Plastic Procedures on the Nose and Eyelids—Motion Picture.

Kenneth L. Pickrell, M.D.

Duke University

Durham

External Diseases of the Eye.

Dan S. Currie, Jr., M.D.—Motion Picture.

Duke University, Durham

(Before Second General Session, May 5)

SECTION ON RADIOLOGY

(Dutch Room)

Wednesday, May 5, 1948

J. P. Rousseau, M.D., Chairman, Winston-Salem

Panel Discussion on Radiological Findings in Organic Diseases of the Stomach.

Peptic Ulcer.

Westbrook Murphy, M.D.

James S. Raper, M.D.

Asheville

Carcinoma of the Stomach.

Robert J. Reeves, M.D., Durham
(Before Second General Session, May 5)

Lymphosarcoma.

Joseph Selman, M.D.
Stuart W. Gibbs, M.D.
Winston-Salem

Benign Tumors.

I. Bird, M.D., Greensboro

Infectious Granuloma.

Luther W. Oehlbeck, M.D., Morganton

Gastritis.

W. W. Vaughan, M.D., Durham

The Control of Cancer.

N. C. Division The American Cancer Society, Thomas L. Lee, M.D., Chairman, Cancer Committee, Medical Society of the State of North Carolina, Kinston.

Cytologic Test for Cancer.

The Cancer Control Branch, National Cancer Institute, George N. Papanicolaou, Cornell University Medical College, New York.

Management of Venereal Disease in General Practice.

Venereal Disease Division, U. S. Public Health Service and N. C. State Board of Health.

Old and Modern Moulages Depicting Diseases of the Female Generative Tract.

J. Mason Hundley, Jr., M.D., Professor of Gynecology; Beverly C. Compton, M.D., Associate Professor of Gynecology, School of Medicine, University of Maryland, Baltimore, Md., and Theodore Kardash, M.D., Resident in Gynecology, University Hospital, Baltimore, Md.

Prevention of Deafness; Irradiation of Adenoids.

Alfred T. Lieberman, M.D., and Donald F. Proctor, M.D., Department of Otolaryngology, Johns Hopkins Hospital, Baltimore, Md.

Treatment of Congenital Flat Feet.

J. E. M. Thomson, M.D., Lincoln, Neb., and Frederick S. Webster, M.D., Orthopaedic Department, Duke Hospital, Durham, N. C.

THIRD GENERAL SESSION

(Ball Room)

Wednesday, May 5, 1948

5:00 P.M.—Report of House of Delegates

5:15 P.M.—Unfinished Business

5:20 P.M.—New Business

5:30 P.M.—Installation of President-Elect and Vice Presidents, by President James F. Robertson, M.D.

5:40 P.M.—Remarks by President and President-Elect

5:50 P.M.—Adjourn Sine Die

SCIENTIFIC EXHIBITS**Tick Typhus (Rocky Mountain Spotted Fever) in North Carolina.**

Bowman Gray School of Medicine of Wake Forest College, Weston M. Kelsey, M.D., Assistant Professor of Pediatrics, and Robert B. Lawson, M.D., Associate Professor of Pediatrics, Winston-Salem.

Disability Evaluation of the Forearm and Hand.

Baruch Center of Physical Medicine, Medical College of Virginia, F. A. Hellebrandt, M.D., Director, Richmond, Va., Walter J. Lee, M.D., Associate Professor of Physical Medicine, Miss Helen V. Skowlund, Research Associate, Baruch Center of Physical Medicine, Richmond, Va., Miss Judith M. Blue, Research Assistant, Baruch Center of Physical Medicine, Richmond, Va.

Vaginal Cervical Smear in the Diagnosis of Uterine Cancer.

William Bickers, M.D., Medical Arts Building, Richmond, Va.

Streptomycin in Urinary Tract Infections.

Bowman Gray School of Medicine of Wake Forest College, Fred K. Garvey, M.D., and George T. Harrell, M.D., Winston-Salem.

Muscle Testing Techniques in Poliomyelitis.

National Foundation for Infantile Paralysis, Mr. P. S. Randolph, State Representative, Chapel Hill.

Lung Abscess.

Roy G. Klepser, M.D., F.A.C.S., Associate in Thoracic Surgery, Georgetown University Medical School, Washington, D. C.

The Menace of the Rat.

Thomas G. Hull, American Medical Association, Chicago, Ill.

Certain Painful Orthopedic Conditions and Treatment by Sympathetic Block.

Bowman Gray School of Medicine of Wake Forest College, R. A. Moore, M.D., H. F. Forsyth, M.D., P. H. Dillard, M.D., and E. W. Schafer, M.D., Winston-Salem.

Treatment of Inoperable Breast Carcinoma with Testosterone.

Howard W. Jones, M.D., and Grant E. Ward, M.D., Johns Hopkins Medical School, Baltimore, Md.

Management of Tongue Cancer.

Grant E. Ward, M.D., Arthur G. Sinwinski, M.D., Howard W. Jones, M.D., and John O. Robben, M.D., Johns Hopkins Medical School, Baltimore, Md.

TECHNICAL EXHIBITORS

A. S. Aloe Co., St. Louis, Mo., spaces 69 and 70

Baker Laboratories, Inc., Cleveland, Ohio, space 87

Billhuber-Knell Corporation, Orange, N. J., spaces 65 and 66

Borden Company, New York, spaces 57 and 58

Camel Cigarettes, New York, spaces 35, 36, 37 and 38

Ciba Pharmaceutical Products, Inc., Summit, N. J., spaces 71 and 72

Commercial Casualty Insurance Co., Durham, space 8

Davies, Rose & Co., Boston, Mass., space 39

Doak Company, Inc., Hyattsville, Md., spaces 75 and 76

Dobo Chemical Corporation, New York, spaces 9 and 10

Drug Specialties, Inc., Winston-Salem, space 49

Eli Lilly and Co., Indianapolis, Ind., spaces 59 and 60

Endo Products, Inc., Richmond Hills, N. Y., space 80

Fellows Medical Manufacturing Co., New York, space 102

C. B. Fleet Co., Inc., Lynchburg, Va., space 47

General Electric X-Ray Corporation, Charlotte, spaces 83 and 84

J. E. Hanger of North Carolina, Inc., Raleigh, spaces 97 and 98

Charles C. Haskell & Co., Inc., Richmond, Va., spaces 67 and 68

Hoffman-LaRoche, Inc., Nutley, N. J., spaces 81 and 82

Holland-Rantos Co., Inc., New York, spaces 91 and 92

Lanteen Medical Laboratories, Inc., Chicago, Ill., spaces 44 and 45

Lederle Laboratories, N. Y., spaces 61 and 62

Liebel-Flarsheim Co., Cincinnati, Ohio, spaces 95 and 96

J. B. Lippincott Co., Philadelphia, Pa., spaces 89 and 90

M & R Dietetic Laboratories, Inc., Columbus, Ohio, space 77

Mead Johnson & Co., Evansville, Ind., space 40

Merck & Co., Rahway, N. J., spaces 6 and 7

Wm. S. Merrell Co., Cincinnati, Ohio, spaces 73 and 74

Ortho Pharmaceutical Corporation, Linden, N. J., spaces 55 and 56

Parke, Davis & Co., Detroit, Mich., spaces 53 and 54

Philip Morris & Co., New York, spaces 13 and 14

Pickering X-Ray Corporation, Charlotte, N. C., spaces 103, 104 and 105

Powers and Anderson of North Carolina, Winston-Salem, N. C., space 17

Wm. P. Poythress & Co., Inc., Richmond, Va., spaces 78 and 79

L. & B. Reiner, New York, space 48

S. & H. X-Ray Corporation, Charlotte, space 114

W. B. Saunders Co., Philadelphia, spaces 115 and 116

G. D. Searle & Co., Chicago, Ill., spaces 15 and 16

Sharpe and Dohme, Inc., Philadelphia, Pa., spaces 85 and 86

E. R. Squibb & Sons, New York, spaces 11 and 12

Tablerock Laboratories, Greenville, S. C., space 46

U. S. Vitamin Corporation, New York, space 43

VanPelt & Brown, Inc., Richmond, Va., spaces 63 and 64

Westinghouse Electric Co., Greensboro, N. C., spaces 93 and 94

White Laboratories, Inc., Newark, N. J., spaces 4 and 5

Winchester Surgical Supply Co., Charlotte, spaces 1, 2, 3, and 50, 51 and 52

Winthrop-Stearns, Inc., New York, spaces 41 and 42

Wyeth, Incorporated, Philadelphia, Pa., space 88

Zimmer Manufacturing Co., Charlotte, space 101

BULLETIN BOARD

(CONTINUED FROM PAGE 218)

NORTH CAROLINA BRANCH OF THE AMERICAN ACADEMY OF GENERAL PRACTICE

The North Carolina Branch of the American Academy of General Practice will meet at the Theater in Pinehurst on Sunday, May 2, at 3 p.m. Dr. John R. Bender, president, urges that all general practitioners who are members of the Medical Society of the State of North Carolina attend this meeting.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Dr. John William Roy Norton was elected North Carolina State Health Officer at a meeting of the State Board of Health called to select a successor to Dr. Carl V. Reynolds, who will retire June 30, 1948.

Dr. Norton completed the first two years in medicine at the University of North Carolina Medical School in 1926, and received his M.D. degree from Vanderbilt University Medical School in 1928. He received the degree of Master of Public Health from Harvard University in 1936, and from 1936 to 1938 was a member of the staff of the State Board of Health. In September, 1938, he was made professor of public health administration in the University of North Carolina School of Public Health, and served in that capacity until November, 1940.

He then entered the United States Army with the rank of captain. After about three years' service abroad, and several months' service at home, he was discharged with the rank of lieutenant-colonel. Since that time, he has been with the TVA with headquarters at Chattanooga, Tennessee.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The annual meeting of the North Carolina Tuberculosis Association will be held at the Sir Walter Hotel in Raleigh on May 17 and 18. Dr. H. F. Eason of Wilson is chairman of the program committee.

The North Carolina Tuberculosis Association will cooperate with the National Tuberculosis Association again this year in making available fellowships for the summer session at the University of Michigan School of Public Health. These fellowships are offered to Negro nurses, teachers, principals, and social workers.

Dr. Max Pinner, editor of the *American Review of Tuberculosis*, died at his home in Berkeley, California, on January 7.

GREENSBORO ACADEMY OF MEDICINE

North Carolina physicians taking part in the medical symposium sponsored by the Greensboro Academy of Medicine and held in Greensboro on March 18 included Dr. James H. McNeill of North Wilkesboro, Drs. R. L. Wall and H. H. Bradshaw of Winston-Salem, Drs. R. A. Ross and Edward S. Orgain of Durham, and Dr. J. F. Robertson of Wilmington. The speakers for the symposium were Dr. Robert A. Hingson, Dr. Emil Novak, Dr. Tinsley Harrison, Dr. W. Emory Burnett, and Dr. Edward Weiss. Dr. H. C. Lennon is president of the Greensboro Academy of Medicine.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. George T. Harrell, Jr., director of the department of internal medicine of the Bowman Gray School of Medicine, and Dr. W. C. Davison, dean of the Duke University School of Medicine, have been elected members of the six-man executive medical board to formulate the research policy and clinical program to be undertaken at the Oak Ridge Hospital in Oak Ridge, Tenn. They were among the eleven doctors representing various Southern medical colleges who were nominated for the position at a meeting held in Oak Ridge March 1 and 2. The Atomic Energy Commission will take steps to initiate immediately a program of providing facilities at the Oak Ridge Hospital for research in the treatment of leukemias and other malignant diseases, using short-lived radio-isotopes directly from the nuclear reactor there.

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Dr. Angus Crawford Randolph, former resident psychiatrist at the Veterans Hospital, Perry Point, Maryland, has joined the staff of the department of neuropsychiatry as senior resident in psychiatry at Graylyn. A native of Lexington, Virginia, Dr. Randolph is a graduate of Princeton University and the University of Virginia Medical School. He has held a fellowship in preventive medicine at Johns Hopkins and served in the psychiatric outpatient department there since being discharged from the medical corps of the army air force.

* * * *

Recent grants made to the Bowman Gray School of Medicine include:

A grant of \$1,000 from the executive committee of the North Carolina division of the American Cancer Society to pay for a refresher course in cancer for physicians in the state.

Two grants totaling \$31,300 from the National Cancer Institute of the U. S. Public Health Service. One grant of \$24,900 is to aid in cancer teaching under the direction of Dr. R. P. Morehead, head of the department of pathology. The other grant of \$6,400 is for the establishment of a follow-up service on tumors received from approximately forty hospitals in North Carolina.

A grant of \$5,950 from the National Advisory Health Council of the U. S. Public Health Service for study of the formation of phospho-lipids by the liver in cirrhosis of the liver. Radioactive materials from the atomic pile are being used in this study. Dr. Camillo Artom and Dr. W. E. Cornatzer of the department of biochemistry have been experimenting with animals in this research. Dr. David Cayer of the department of medicine, in collaboration with Dr. Cornatzer, will apply the study to human patients.

Another grant of \$8,100 from the National Advisory Health Council in support of research already under way in the department of medicine on factors concerned with resistance built up by the human body to chemotherapy.

A terminal grant of \$8,400 awarded to the department of physiology and pharmacology in support of research being conducted by Dr. Harold D. Green and Dr. J. Maxwell Little in the field of peripheral vascular circulation. The grant is from the Life Insurance Medical Research Fund and is to extend for one year, beginning July 1, 1948. The department received a similar grant of \$6,800 from the Fund for work in the same field last year.

Dr. Cecil K. Drinker of Boston, Massachusetts, professor of physiology at Harvard University and dean of the School of Public Health, spoke on the "Function of the Peritoneum" at the meeting of the Bowman Gray Medical Society on March 22.

* * *

Dr. Douglas M. Kelley, president of the Rorschach Society, attended meetings of the Society at Vanderbilt University, Nashville, Tenn., April 10 to April 14.

* * *

Dr. Frank Lock, head of the department of obstetrics and gynecology, discussed "Anesthetic Deaths in Obstetrics" at the meeting of the South Carolina Obstetric and Gynecologic Society in Camden, South Carolina on April 3.

* * *

Members of the staff of the Bowman Gray School of Medicine are continuing during April a series of lectures and clinics in the postgraduate course for the Veterans Administration hospital at Mountain Home, Tenn. The speakers for April are Dr. Elbert MacMillan, Dr. E. O. Jeffreys, Dr. Robert B. Lawson, Dr. C. M. Norfleet, Dr. G. T. Harrell, Dr. Felda Hightower, Dr. H. F. Forsyth, Dr. W. M. Kelsey, Dr. R. W. Postlethwaite, and Dr. W. E. Cornatzer. The series of lectures began in February and will continue through May and June.

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Dr. Wingate M. Johnson, professor of clinical medicine, spoke at the Annual Secretaries' Conference of the West Virginia State Medical Association, held in Charleston on March 14. His subject was "Postgraduate Education for the General Practitioner."

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

Course in Medical Mycology

A month's course in Medical Mycology, under the direction of Dr. Norman F. Conant, is to be offered at Duke University School of Medicine and Duke Hospital, Durham, June 28-July 30. The course will be offered every day in the week, except Sunday, and has been designed to insure a working knowledge of the human pathogenic fungi within the time allotted.

A fee of \$50.00 will be charged for this course, upon completion of which a suitable certificate will be awarded. Please direct inquiries to Dr. Norman F. Conant, Duke University School of Medicine, Durham, N. C.

A more detailed announcement concerning this course appeared in the *North Carolina Medical Journal* for January.

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Dr. K. D. Weeks of Rocky Mount was speaker at the March meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on March 10. His subject was "Congenital Heart Disease."

FORSYTH COUNTY MEDICAL SOCIETY

A dinner meeting of the Forsyth County Medical Society was held in Winston-Salem on March 9. Dr. C. Bruce Morton, II, of the Department of Surgery, University of Virginia, spoke on gallbladder disease.

HALIFAX COUNTY MEDICAL SOCIETY

A moving picture from the library of the American Medical Association was shown to the Halifax County Medical Society at its regular monthly dinner and meeting, held on March 12 in Roanoke Rapids. The title of the movie was "Physical Diagnosis of Unusual Endocrine Cases."

JEFFERSON MEDICAL ALUMNI

Dr. George T. Wood of High Point, who has recently been elected vice president of the Alumni Association of the Jefferson Medical College for the state of North Carolina, has asked that Jefferson alumni send him information regarding their own activities or those of other Jefferson alumni in the state. The Association is particularly anxious to know of changes of address and deaths among its members.

THE ROYSTER CLUB

The Royster Club is the title of an organization recently formed by a group of the younger physicians in Raleigh. It is named in honor of Dr. Hubert A. Royster, retired surgeon, who is the honorary president and takes an active interest in the club. Meetings are held monthly, each member in turn acting as host. The Club is devoted to medical research, the presentation of original work, and the discussion of advanced scientific knowledge. The various specialties are represented in its membership, which at present is limited to eighteen in number.

NEWS NOTES

Dr. Reuben A. McBrayer died of a coronary thrombosis at his home in Southern Pines on February 21.

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Dr. E. C. Clayton has opened offices for the general practice of medicine in Asheville.

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Dr. John Carroll Wiggins, Jr., has announced the opening of offices for the practice of internal medicine in Winston-Salem.

* * *

Dr. Robert L. Garrard has recently returned to Greensboro to resume the private practice of neurology and psychiatry. He will be associated with Drs. Smith, Stevens, Harrill, Brown, Apple, and Barefoot, and will in addition be consultant to the Veterans Administration, Neuropsychiatric Division, Winston-Salem, and consultant psychiatrist at the Woman's College of the University of North Carolina.

Dr. Garrard left Greensboro to enter military service in July, 1942. Since being separated from service in April, 1946, he has served as director of the neuropsychiatric division of the Charles V. Chapin Hospital in Providence, Rhode Island, and later as director of the V. A. Mental Hygiene Clinic in Providence.

AMERICAN HEARING SOCIETY

Beginning April 1, 1948, the American Hearing Society, which has been housed for twenty-five years in the Volta Bureau Building, 1537 35th Street, Northwest, will be occupying quarters at 817 14th Street, Northwest, Washington 5, D. C.

SOUTHERN PEDIATRIC SEMINAR

The twenty-eighth annual session of the Southern Pediatric Seminar, reorganized under a Board of Directors since the death of its founder, Dr. D. L. Smith, Sr., will be held in Saluda, North Carolina, July 5-17, 1948. Officers of the Seminar are Dr. S. F. Ravenel, dean; Dr. F. H. Richardson, vice dean; and Dr. M. W. Beach, vice dean elect. The following faculty has been elected by the Board of Directors: S. F. Ravenel, F. H. Richardson, O. H. Wilson, J. L. Ward, Lee Bivings, A. M. McBryde, R. M. Pollitzer, W. C. Davison, J. M. Arena, K. M. Lynch, J. W. White, P. A. Mulherin, W. W. Quillian, Hines Roberts, M. W. Beach, D. L. Smith, Jr., J. P. Price, Robert Lawson, Amos Christie, Ambrose McGee, G. D. Johnson, Hughes Kennedy, K. H. Smith, G. W. Wilkinson, Oren Moore, O. L. Miller, W. L. Funkhouser, L. W. Holloway, R. W. McKay.

The Board of Directors includes the following members from North Carolina: Dr. J. LaBruce Ward of Asheville, Dr. W. C. Davison of Durham, and Dr. Robert Lawson of Winston-Salem.

Information concerning registration for the 1948 session may be obtained from Dr. M. A. Owings, secretary-treasurer, Saluda, N. C. The registration fee is \$25.00.

VETERANS ADMINISTRATION

Under a program just announced by the Veterans Administration, young North Carolina physicians who have finished residency training may now complete the requirements for their specialty board examinations through supervised practice as full-time staff members in VA hospitals. Initial salaries range from \$4,149 to \$7,102 a year.

Oteen and Fayetteville VA Hospitals have openings at present, and there are other vacancies in VA hospitals at Perry Point, Md.; Martinsburg, W. Va.; Huntington, W. Va.; Kecoughtan, Va.; and Roanoke, Va.

To qualify for a position under this program, a physician must have completed three years of residency training in medicine, surgery or neuropsychiatry at an approved institution. These posts have been available heretofore to men finishing courses at VA hospitals but are being offered for the first time to those trained in other institutions.

Doctors wishing more detailed information or those wishing to file applications should communicate with the Branch Medical Director, Veterans Administration, 900 N. Lombardy Street, Richmond 20, Va. Meanwhile, they are welcome to visit any of the hospitals named and consult the manager about opportunities.

* * *

Appointment of Dr. Harvey J. Tompkins of Arlington, Va., as head of the neuropsychiatric service in Veterans Administration Department of Medicine and Surgery, was announced recently by Dr. Paul B. Magnuson, chief medical director. Dr. Tompkins succeeds Dr. Daniel Blain, who has resigned to accept the position of medical director of the American Psychiatric Association. Dr. Blain has been chief of VA's neuropsychiatric service since November, 1945. He will continue to serve VA's chief medical director in an advisory capacity.

AMERICAN PHYSIOTHERAPY ASSOCIATION

The annual conference of the American Physiotherapy Association will be held at the LaSalle Hotel in Chicago, May 23-28.

AMERICAN COLLEGE OF SURGEONS APPROVES USE OF NURSE ANESTHETISTS

The Board of Regents of the American College of Surgeons, at a meeting on February 22, adopted a resolution commending the services of nurses who have had special training in the administration of anesthesia and recommending the continuance of training courses in this field for nurses. The resolution reads as follows:

"The American College of Surgeons regards with deep concern the actions of some physician anesthesiologists in giving the impression to the laity in the public press that it is unsafe for experienced nurse anesthetists to conduct surgical anesthesia. While it supports the increasing tendency of physician anesthesiologists in charge of surgical anesthesia, it deplores at this time any propaganda for the elimination of the trained nurse anesthetist. On the contrary, the American College of Surgeons is of the opinion that, in view of the inadequacy in number of the physician anesthesiologists and in view of the splendid record of achievement of the nurse anesthetists, institutions engaged in the training of nurses for this purpose should be encouraged to continue their programs."

NATIONAL GASTROENTEROLOGICAL ASSOCIATION

The National Gastroenterological Association will hold its thirteenth scientific session at the Hotel Pennsylvania in New York City on June 7-10, 1948. The program for the first three days will be at the Hotel Pennsylvania and will consist of symposia on gastroduodenal ulcer, ulcerative colitis, jaundice, and metabolism, nutrition and allergy. The panel discussion, which will be followed by a "question and answer" period, will cover the topics of diabetic, tubercular, psychosomatic and cardiac manifestations in gastrointestinal diseases. The fourth day of the session will be devoted to a clinical day at cooperating hospitals in New York City.

Further details and a copy of the program may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broadway, New York 23, New York.

AMERICAN COLLEGE OF CHEST PHYSICIANS

The Board of Examiners of the American College of Chest Physicians announces that the next oral and written examinations for Fellowship will be held at Chicago, June 17, 1948. Candidates for Fellowship in the College, who would like to take the examinations, should write the Executive Secretary, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

The fourteenth annual meeting of the American College of Chest Physicians will be held at the Congress Hotel, Chicago, Illinois, June 17-20, 1948. An interesting scientific program has been arranged for this meeting, and speakers from several other countries are scheduled to appear.

INTERNATIONAL SHORT WAVE CONGRESS

The sixth international short wave congress will be held in Amsterdam, July 19-24, 1948. Further information may be obtained from the secretary, Dr. J. Samuels, Weteringschans 73, Amsterdam, Holland.

INTERNATIONAL SOCIETY OF HEMATOLOGY

The International Society of Hematology will hold its bi-annual meeting at the Hotel Statler, in Buffalo, New York, August 23-26, 1948. Applications for the presentation of scientific exhibits are now being received by Dr. O. P. Jones, Department of Anatomy, University of Buffalo, Buffalo, New York. Chairman of the Program Committee is Dr. Ernest Witebsky, Buffalo General Hospital, Buffalo, New York.

All scientific sessions and exhibits will be open to scientists interested in hematology. Communications and applications concerning membership from this country will be received by Dr. William Dameshek, 25 Bennett St., Boston, Massachusetts. Those interested in attending the meeting may communicate with Dr. Sol Haberman, Secretary, The William Buchanan Blood Center, Baylor Hospital, Dallas, Texas.

NEWS NOTES FROM THE OFFICE OF THE SURGEON GENERAL

U. S. Army Passes Through Winter with Best Health on Record

The United States Army was in better health throughout the past winter than during any like period in past years for which comparable statistics are available, it was announced recently by the Army Medical Department.

Strictly comparable figures for the past quarter-century disclose an average January hospital admission rate in the Army of a little over 14 per 1000 troops per week, while the weekly rate for January, 1948, was 9.4 per 1000. The February, 1948, rate was 50 per cent lower than the average for the past twenty-five years; the rate this year was approximately 10½ cases of illness per 1000 troops per week, while the twenty-five year average was about 15½ per week.

* * * *

New Professional Training Opportunities Offered Army Doctors

A revised and greatly expanded professional training program for regular Army and Reserve Medical Officers has been announced by Major General Raymond W. Bliss, Surgeon General of the Army. In line with the policy of providing in the U. S. Army the highest standard of medical care in the world, the program calls for 1900 new doctors in the Regular Army and an increasing number of volunteer Reserve officers on active duty. The program is designed to give many more Army doctors the training needed to meet the requirements for certification by the American Specialty Boards, and to further integrate civilian and military medicine.

Information concerning any part of the program may be obtained from the Surgeon General's Office. Address requests to the attention of the Chief of Personnel, SGO, Department of the Army, Washington, D. C.

THE NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

Latest medical knowledge on the causes and treatment of cerebral palsy is contained in "The Problem of Cerebral Palsy Today," a 57-page booklet written by Dr. Meyer A. Perlstein, one of the nation's foremost pediatricians.

Copies of the booklet can be obtained from the National Society for Crippled Children and Adults, Inc., 11 S. La Salle Street, Chicago 3, Illinois, at 25 cents each.

Classified Advertisements

ASSOCIATE WANTED

WANTED: A young or middle-aged eye, ear, nose and throat specialist as an associate in a well established practice.

Address replies to Box 292, Wilson, N. C.

ASSOCIATE WANTED

WANTED: An associate in a busy eye, ear, nose and throat practice in central North Carolina. Opportunity, work, and financial returns unlimited.

Address "B"

Post Office Box 456
Winston-Salem, N. C.

ASSOCIATION WITH SURGEON DESIRED

North Carolina native and graduate of the University of Virginia, aged 34, with three years approved training in general surgery and one year in general practice, a veteran, desires association with established surgeon.

Address "G"

Post Office Box 456
Winston-Salem, N. C.

FOR SALE

TUBERCULOSIS SANATORIUM, well established, suburban Asheville location. Frame construction. Twenty rooms, nine sun porches, five baths, running water in every room. Forty-patient capacity. Completely furnished, including linens. Price \$21,000. Terms.

NURSING HOME in quiet residential district of Asheville. Brick construction. Completely furnished. Ten bedrooms, three baths, full attic, large porch. Price \$21,000. Terms.

Offered by Fidelity Business Brokers, Inc.,
Lobby Jackson Building,
Asheville, N. C., Phones 3166-5156

FOR SALE

Lake Lure, North Carolina

Charming mountain retreat in beautiful Blue Ridge, suitable for physician or patient seeking peace and quiet. One story, rambling house with 3½ acres finest woodland and ravines. Three bedrooms, three baths, vaulted living room, huge stone fireplace, dining room, modern kitchen, screened porch, luxurious closet space, knotty pine interior. Concrete basement, oil furnace, hot water heater, laundry tubs. Suitable year-round. In best repair. Price, \$19,000.

For further details address:

Office of Business Manager, North Carolina
Medical Journal, Red Springs, N. C.

AUXILIARY

TWENTY-FIFTH ANNUAL MEETING OF THE

AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

RULES AND PROCEDURE

1. Register on arrival and receive badge. (\$1.00—fifty cents for Auxiliary expense and dues to Auxiliary of A.M.A., and fifty cents for upkeep of three beds at State Sanatoria maintained for doctors, doctors' families, nurses, children, others, preference in order given—fee for all who do not present current membership card.) Wear badge to all functions.
2. Register for Bridge Party.
3. Secure Luncheon Ticket.

PROGRAM

Monday, May 3rd

8:30 P.M. Bingo Party—Pine Room—Mrs. Geo. Heinitsh, Chairman
For men and women—50 cents per card
Balance cleared will go to Auxiliary Bed Fund

Tuesday, May 4th

9:00 A.M. Executive Board Meeting—Pine Room
10:30 A.M. Annual Meeting—Pine Room
1:00 P.M. Silver Anniversary Luncheon—Pinehurst Country Club—Mrs. W. F. Hollister, Chairman
Carolina and Holly Inn luncheon tickets will be accepted. Those not registered at these hotels may purchase tickets before 11:00 A.M. at Carolina Hotel Desk. Transportation to club furnished.
4:00 P.M. Tea—West Parlor—Mrs. Thos. N. Lide, Chairman
Honoring 1. Mrs. W. Reece Berryhill
2. Mrs. Raymond Thompson
3. Mrs. J. F. Robertson
4. Past Presidents
7:00 P.M. Medical Society Banquet
10:00 P.M. Medical Society Ball

Wednesday, May 5th

10:00 A.M.—Bridge Party—(Large Card Room)—Mrs. R. M. McMillan, Chairman

GENERAL MEETING

Tuesday, May 4—10:30 A.M.

Pine Room

Mrs. W. Reece Berryhill, President, Presiding

PROGRAM

Call to Order.....Mrs. W. Reece Berryhill, Chapel Hill
Invocation.....Mrs. P. P. McCain, Southern Pines
Address of Welcome.....Mrs. H. E. Bowman, Aberdeen
Response.....Mrs. Ben Lawrence
Memorial Service.....Mrs. H. H. Foster, Norlina

Reports of Executive Officers

First Vice-President
Chmn. of Organization.....Mrs. Frederick Taylor, High Point
Second Vice-President
Chairman of Activities.....Mrs. Watson Roberts, Durham
Corresponding Secretary.....Mrs. Fred Patterson, Chapel Hill
Recording Secretary.....Mrs. David Cayer, Winston-Salem
Treasurer.....Mrs. E. C. Judd, Raleigh
President.....Mrs. W. Reece Berryhill, Chapel Hill

Report from Chairman of
Advisory Board.....Dr. Rachel Davis, Kinston

Report of Chairman of
Revision Committee.....Mrs. J. Buren Sidbury, Wilmington
Greetings from Medical Society of the State of
North Carolina.....Dr. J. F. Robertson, Wilmington

Presentation of Davis Cup

Unfinished Business

New Business

Election of Delegate to National Auxiliary
Report of Nominating
Committee.....Mrs. George Carrington, Burlington
Installation of Officers.....Mrs. P. P. McCain, Southern Pines
Presentation of Gavel
Inaugural Remarks.....Mrs. Raymond Thompson, Charlotte

Announcements

Adjournment

MOORE COUNTY AUXILIARY HOSTESSES

Mrs. H. E. Bowman.....Aberdeen, President
Mrs. A. A. Vanore.....Robbins, Vice-President
Mrs. Thos. N. Lide.....Southern Pines, Sec.-Treas.
Mrs. P. P. McCain.....Southern Pines, General Chairman
Mrs. J. S. Milliken.....Southern Pines
Mrs. R. M. McMillan.....Southern Pines
Mrs. Wm. F. Hollister.....Southern Pines
Mrs. George Heinitsh.....Southern Pines
Mrs. Reuben MacBrayer.....Southern Pines
Mrs. M. I. Pishkoe.....Southern Pines
Mrs. R. G. Rosser.....Vass
Mrs. C. E. Brady.....Robbins
Mrs. W. M. Marr.....Pinehurst
Mrs. W. C. Mudgett.....Pinehurst
Mrs. J. C. Grier.....West End

CORRECTION

The name of Mrs. R. A. Herring of High Point, a member-at-large, was inadvertently omitted from the roster of members which appeared in the September issue of the NORTH CAROLINA MEDICAL JOURNAL.

BOOK REVIEWS

Ovarian Tumors, an independent unit of the loose-leaf **Encyclopedia of Endocrinology**. By Hans Selye, M.D., Ph.D. (Prague), D.Sc. (McGill), F.R.S. (Canada), Professor and Director of the Institute of Experimental Medicine and Surgery, University of Montreal. 2 volumes, amply illustrated. Price, \$21.75. Montreal, Canada: Richardson, Bond and Wright, Publishers, 1946.

In the monumental **Encyclopedia of Endocrinology** prepared by Dr. Selye, two volumes on the subject of ovarian tumors appear. They may be purchased independent of the complete set of books.

These volumes represent a complete review of the world literature on this important subject. One volume of 427 pages is required for compiling and accurately cataloguing more than 33,000 references on ovarian tumors.

The organization of the text is clear and concise, and one may learn without difficulty the information which is available in the literature relative to any question concerning benign or malignant ovarian neoplastic diseases. The subject index covers each major subject, and further minute sub-indices permit immediate reference to the page and section of the text dealing with any subject. The terminology used and the organization of material differs slightly from that usually found in the American texts. However, no difficulty in identifying the subject matter results, since all synonymous terms are listed.

Each section presents a complete analysis of available knowledge on the subject. For example, the section on "Ovarian Common Carcinomas" includes subdivisions on synonyms, references to all major reviews of the subject which have appeared in English, French, German, Italian, and Spanish, definitions, history, classification, pathologic anatomy, chemical composition, incidence, pathogenesis, clinical course, complications, diagnosis, prognosis, and therapy.

These volumes represent the outstanding recent contribution in the field of ovarian disease. They combine the features of a practical working source of information with an invaluable reference book. It is impossible to indicate the scope of this fine work, which can be recommended without reservation.

Gynecology with a section on Female Urology. By Lawrence R. Wharton, Ph.B., M.D., Assistant Professor of Gynecology, The Johns Hopkins Medical School; Assistant Attending Gynecologist, The Johns Hopkins Hospital; Consultant in Gynecology, The Union Memorial Hospital, Hospital for the Women of Maryland, Sinai Hospital and Church Home and Infirmary. Ed. 2. 1027 pages, with 479 illustrations. Price, \$10.00. Philadelphia and London: W. B. Saunders Company, 1947.

Dr. Wharton has enlarged and improved his fine book on gynecology and female urology in this second edition. He has brought his subjects up to date, and each one is clearly and fully described. No extraneous material is included. His second chapter on congenital malformations and their management is excellent and easily understood.

The section on endocrinology presents the factual information which is now available to us relative to normal sexual endocrinology of the female and the frequent abnormalities which are encountered in practice. The discussion of their management is clear and to the point.

The section on pelvic infection is excellent. The author points out that conservative treatment is invariably indicated in acute pelvic infections, and carefully and clearly outlines the plan of therapy which should be instituted. The discussion of chronic inflammatory disease gives a good presentation of the accepted procedure in the management of these conditions.

The section on leukorrhea and vaginal infections outlines a specific approach to the diagnosis of the offending organism and describes various specific agents which may be used for treatment.

The chapters on cervical disease are greatly improved. Carcinoma of the cervix is given consideration, and greater emphasis is placed upon the early diagnosis of cervical malignancies. The author states that a biopsy should be taken before any treatment is begun for cervical disease of any type. The discussion of the treatment of carcinoma of the cervix is a careful collection and presentation of the present opinion. Irradiation and operation are discussed at some length, and the advantages and disadvantages of various forms of therapy are given an unprejudiced review.

The section of the book dealing with female urology contains a new chapter on water cystoscopy in the female prepared by Dr. Charles L. Prince, in addition to the chapters on air cystoscopy using the Kelly technique. A short but excellent chapter on the relationship between the urinary and reproductive organs in women is included.

This new edition of Dr. Wharton's text is highly recommended.

Applied Medical Bacteriology. By Max S. Marshall, Ph.D., Division of Bacteriology, Medical Center of the University of California, San Francisco, California. 340 pages. Price, \$4.50. Philadelphia: Lea & Febiger, 1947.

The author has made an outstanding contribution to the student and clinician in this well written, up-to-date presentation of medical bacteriology. The application of this science is made clearly evident by a brief and concise integration of the fundamentals of bacteriology with the epidemiology, pathology, and symptomatology of the infectious diseases.

The first part of the book deals with practical techniques, including those which are essential for public health control. Two valuable chapters on biologic products and methods of collection and shipment of specimens follow. The remainder of the text deals with approximately sixty-five infectious diseases and outlines specific serologic and bacteriologic methods useful in the diagnosis of each. The constant use of cross-indexing adds to readability by eliminating unnecessary repetition.

This book is highly recommended to the medical student, public health officer, and practitioner. In addition, it should serve as a valuable broadening supplement for the technician or student of bacteriology.

A Manual of Clinical Therapeutics — A Guide for Students and Practitioners. By Windsor C. Cutting, M.D., Professor of Therapeutics, Stanford University School of Medicine, San Francisco, California. Ed. 2. 712 pages, with 30 illustrations. Price, \$5.00. Philadelphia and London: W. B. Saunders Company, 1948.

The second edition of the **Manual of Clinical Therapeutics** should prove to be of considerable value for medical students, house officers, and practitioners of general medicine. As Dr. Cutting stated in the preface of his book, these are the groups for whom it was primarily intended.

The manual is not a substitute for the more detailed texts of pharmacology and therapeutics, but is a concise, pocket-sized guide to specific medical treatments.

This edition includes the many significant improvements in therapy which have been introduced within the past four to five years. The newer antibiotics, vitamins, and antihistamine, antithyroid and antimalarial drugs are among the many subjects which have been added since the first edition. Specific references to the current literature have been cited in connection with the treatment of each disease process.

The manual is necessarily succinct, but space has been allotted to a clinical description of each syndrome.

Of especial value are the nine appendices, which include sections on diets, physiotherapy, prescriptions, poisons, dosages, height and weight charts, and techniques of the more common diagnostic procedures and of drug and fluid administration.

The Foot and Ankle. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Bone and Joint Surgery, Northwestern University Medical School; Professor of Orthopaedic Surgery, Postgraduate Medical School of Cook County Hospital; formerly Colonel, Medical Corps, Army of United States. Ed. 3. 847 pages. Price, \$11.00. Philadelphia: Lea and Febiger, 1947.

The third edition of Lewin's book has been thoroughly revised and includes the latest material about chemotherapy, circulatory lesions, bone grafting, and plastic procedures as they apply to the foot and ankle. The author has drawn heavily on his valuable experience in World War II in bringing this extensive work up to date.

The book is meant to serve as a guide to the student, general practitioner, industrial surgeon, and orthopedic surgeon in the diagnosis and treatment of conditions in the foot and ankle. It is too detailed for practical purposes, however, unless one is primarily concerned with these conditions.

There is no aspect of the subject that has not been thoroughly covered. Three hundred and eighty-nine admirable illustrations make the descriptive material very easy to understand.

One should know the author to appreciate the philosophy which is sprinkled generously throughout.

Pharmakologie als Theoretische Grundlage Einer Rationellen Pharmakotherapie. By Knud O. Moeller. 744 pages. Basel, Switzerland: Benno Schwabe and Co., 1947; imported by Grune & Stratton, Inc., New York.

The author of this text is professor of pharmacology in the University of Copenhagen. His book is

comprehensive and exceptionally modern, considering the difficulties under which it was written. Its value is increased by an extensive bibliography which is especially rich in European references.

The appeal of this text to students of the United States is considerably decreased by the fact that it is written in German. Nevertheless, to one familiar with German it is apparent that the style is very clear and simple. The book will be interesting and valuable to those who have a reading knowledge of German or to those students who would like to acquire such a knowledge.

Pharmacology, Therapeutics and Prescription Writing — For Students and Practitioners. By Walter Arthur Bastedo, Ph.G., Ph.M. (Hon.), M.D., Sc.D. (Hon.), F.A.C.P., Consulting Physician, St. Luke's Hospital, N. Y.; St. Vincent's Hospital, Staten Island, and the Staten Island Hospital; President, U.S.P. Convention 1930-40; Member Revision Committee, U.S.P. Formerly Curator of the N. Y. Botanical Garden; Attending Physician, City Hospital, N. Y.; Instructor in Pharmacology, Cornell University; Associate in Pharmacology and Therapeutics and Assistant Clinical Professor of Medicine, Columbia University. Ed. 5. 840 pages, with 82 illustrations. Price, \$8.50. Philadelphia and London: W. B. Saunders Company, 1947.

This is the fifth edition of a book which is well known to many generations of medical students. Although much of the material has been changed little from that found in previous editions, such recent advances in pharmacology and therapeutics as antibiotics, folic acid, rutin, metapon, and the antihistaminics are discussed.

The usefulness of this book as a text for medical students and as a reference for the practitioner is impaired by the absence of complete references to outstanding papers and recent comprehensive reviews. The book is easily read, and is quite lucid.

In Memoriam

ANNA M. GOVE, M.D.

In the death of Dr. Anna M. Gove, which occurred at the Wesley Long Hospital in Greensboro on January 28, 1948, the Guilford County Medical Society and the entire profession in North Carolina lost a loyal, skillful, and pioneer member. Dr. Gove was the second woman physician in the state, coming to the Woman's College in 1893. She joined the State and county Societies in 1896. As a pioneer woman physician she was somewhat of a curiosity both to her colleagues in the profession and to the students and their parents at the college; but her outstanding skill as a physician, together with her dignity, charm, and sense of humor, soon won her not only their acceptance, but their devoted love and admiration as well.

Dr. Gove was particularly fitted by nature for the role which she filled so admirably for so many years — that of medical advisor and friend to thousands of young women students. To begin with, she had an active and acute mind, and was intensely interested in every phase of medical progress from the time when as a child she drove with her doctor father on his rounds, and listened to him talk, to the very end of her life, when she was still reading

medical literature and attending scientific meetings with far more eagerness than the condition of her eyes or her health warranted. Given this interest and intelligence, she then proceeded to develop it to the very greatest degree possible. There is no doubt that few doctors in North Carolina, or elsewhere, had the training which she insisted upon for herself. A student at the Massachusetts Institute of Technology, and in 1892 a graduate of the Woman's Medical College of the New York Infirmary, she soon felt her need for further work, and in 1896-97 studied in Vienna under such men as Politzer, Adler, Hensch, and Kraft Ebing. During the summer of 1897 she went to Moscow as official delegate from North Carolina and New Hampshire to the International Medical Congress held there that year. Summer sessions were spent at the University of Chicago, Cornell, and later, two succeeding summers at the University of Michigan. Not satisfied, she again applied for leave of absence in 1913 and 1914, and sailed for further study in Vienna.

All this preparation, admirable as it was, might not have fitted her for the role she chose for herself as a college physician. But her personality was eminently suited to her work. Kindliness, interest, and understanding of the problems of every one, but particularly of young women, hospitality that knew no stint, and generosity that was unbounded were her chief characteristics, and would have won her the love of any community in which she worked. However, in Dr. Gove, extras were added which made girls particularly responsive to her. These extras were charm, a light, graceful sense of humor, which was never biting or sarcastic, beautiful clothes worn always with distinction, and a gracious way of living which appealed particularly to college women. Only the other day a senior was reminded that Dr. Gove had given her her routine medical examination. Her face lit up. "Yes," she said, "I remember. She talked to me about birds and I had such a good time." In 1936 the alumnae of the college expressed their love and admiration for her in asking that the Infirmary, built under her supervision in 1912, be named for her.

Dr. Gove's medical accomplishments are many. Her conduct of Student Health Service at the Woman's College for so many years was always progressive and successful. She was a pioneer in the detection and control of tuberculosis in colleges, a work which is now carried on in all of the better colleges. I quote from a letter by the late Dr. Paul McCain, written May 16, 1936: "Dr. Gove has been one of the leaders among college physicians of the United States in trying to stamp out tuberculosis among college students. She has been one of the pioneers in this work and her efforts have been so greatly appreciated by the National Tuberculosis Association that she was requested to read a paper on the subject at the meeting of the National Tuberculosis Association in New Orleans."

Her work at the college was further recognized in 1933 by the vice-presidency of the American Student Health Association, and in 1936 by the chairmanship of an important round-table discussion at the second National Conference on College Health.

Outside of the college her chief medical contribution was her work in Europe during the first World War. She sailed for Europe under the auspices of the American Red Cross in March, 1918, and did clinic work with children and general community

work in Marseille and the villages round about until she returned to the United States in August, 1918. She was also connected with the Smith College Unit during part of that time. As at the Woman's College, her helpfulness and skill made her invaluable in all capacities of European medical relief.

Dr. Gove belonged to many scientific organizations. She was an honorary fellow of the North Carolina Medical Society, a member of the American Medical Association, the American Public Health Association, and the American Association for the Advancement of Science—to name only a few.

But it is in the hearts of her patients, her friends, and her colleagues that she will live on—a skillful physician, a loyal friend, and a good companion.

* Ruth M. Collings, M.D.

For the Bereavement Committee
of the Guilford County Medical
Society

* * * *

REUBEN ADOLPHUS McBRAYER, M.D.

Reuben Adolphus McBrayer was born in Asheville on November 26, 1891. He was the son of Dr. Lewis B. McBrayer and Lillie Cordelia McBrayer. He received his A.B. degree from Wake Forest College in 1911. In 1916 he was graduated from the University of Pennsylvania Medical School and almost immediately thereafter entered the army as a medical officer. He was on active duty in Mexico prior to World War I and later was on active duty in this country. After World War I he was on the staff of the North Carolina Sanatorium for a time. He later practiced internal medicine in Shelby, North Carolina. For a time he was on the staff of the Yale Medical School and Hospital, and later was associated pathologist of the postgraduate hospital of Columbia University.

In 1937 he was appointed Medical Director of the Ciba Pharmaceutical Products, Inc., Summit, New Jersey, and continued in that capacity for the next five years. During this period he was also consultant in endocrinology and associate in pathology for the Overlook Hospital in Summit.

Dr. McBrayer volunteered for medical duty in World War II on the day following Pearl Harbor, and reported for active duty as a major in the Medical Corps in January, 1942. He continued on active duty throughout the period of the war, serving one and a half years in the European Theater of Operations, first as commanding officer of the 110th Station Hospital and later as hospital inspector for the European Theater of Operations, where he was in the office of the chief surgeon, E.T.O. At the time of retirement from the army he was a full colonel in the Medical Corps, A.U.S.

Since his retirement, Colonel McBrayer had been making his home in Southern Pines. He is survived by his widow, Myrtle F. McBrayer; a brother, Lewis McBrayer; and a sister, Mrs. Sadie McCain. Dr. McBrayer was a member of the American Medical Association, the North Carolina State Medical and Moore County Medical Societies. He was a fellow of the American College of Physicians, a fellow of the New York Academy of Medicine, and a member of the Association of Military Surgeons of the U. S. A.

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PSYCHIATRY IN THE MODERN MEDICAL SCHOOL

ARTHUR H. RUGGLES, M.D.*

PROVIDENCE, RHODE ISLAND

Perhaps the title of this talk should be changed to "Modern Psychiatry in the Modern Medical School." The old descriptive psychiatry which is still taught in a few medical schools is not modern psychiatry, and should not be perpetuated in the modern school trying to train medical students in applied psychiatry. For too many years medical students were burdened with psychiatric terminology of a descriptive type and with classification of nervous and mental diseases on the basis of symptomatology. Now we know that the medical student must be interested in a dynamic concept which helps him to understand not so much whether an illness is a manic-depressive psychosis, a reactive depression, or an involutional melancholia, but rather why Mr. A or Mrs. B becomes depressed, apparently concerning a situation that is common to thousands of Mr. A's and Mrs. B's who do not break down. What is the physiologic or psychologic weakness that makes this individual vulnerable to depressive reactions?

Emphasis on Etiologic Diagnosis and Treatment

The modern medical school now knows that some mental illnesses are *directly* due to physical disorders, and teaches these facts. It teaches also how to remedy the underlying physical disorder through medical treatment, surgical interference, or dietary readjustment. There are many other

nervous and mental illnesses, however, for which we do not know the exact etiology. In such cases we must constantly search for underlying factors—biochemical or psychologic, and sometimes both. The medical student must be given an understanding of the desire to escape from an unpleasant situation through the route of neurosis or psychosis, and must be taught how factors can be manipulated in order to get the patient to employ a more socially and medically acceptable method of meeting difficult situations.

Mr. S., a mild-mannered, industrious little man of 59 years, makes an extremely violent and aggressive suicidal attempt. Why should this Mr. Milktoast choose such an obviously aggressive action? The answer can not, in our modern teaching, be given by saying that he has a depression. It must go extensively into the background and source of his aggression, which proved to be directed against an extremely dominating and sadistic member of his family, for whom he had a terrific, but for many years controlled, hatred. This situation was brought out during a sodium amytal interview, when his inhibitory mechanisms were temporarily removed by the drug. Then we gained a scientific understanding of the case that made our treatment intelligent and effective.

Let us take another case, which illustrates the need for understanding, not only of the personality make-up, but also of the age periods in which certain types of mental illness are most common, and of etiologic factors, both physical and psychic.

Mrs. M., a 48-year-old, childless widow, has spent the last ten years, since her husband's death, employed in a most important

Read at the dedication exercises held at the opening of Graylyn, rehabilitation center of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, September 19, 1947.

* Superintendent of Butler Hospital, Providence, Rhode Island.

secretarial position. She has been outgoing, tending at times to show some overactivity and some overoptimism, but doing her work well. Her office associates notice that she is becoming a bit careless in both her work habits and her social relationships, as well as in her dress. They advise her to see her family doctor, saying that she is "on the verge of a nervous breakdown." A history is taken, a cursory physical examination is made, and she is told that she is working too hard and must rest for a while. During the prescribed two weeks' rest period, she is more and more active, spending money far too freely, and becoming increasingly disordered in her social engagements and in her dress. She begins to develop grandiose ideas, and telephones at all times of day and night to even casual acquaintances. In her written productions, her closest friends notice a marked disorder in her handwriting, as well as in what she attempts to say. She returns to her family doctor for a check-up, and he, appreciating the abnormal state of mind, sends her to a psychiatrist.

In this case the doctor must utilize to the full all known methods of diagnosis, in order to apply the appropriate treatment. Psychologically, the overactivity, some flight of ideas, and a grandiose trend of thinking and acting are apparent. Is this a nervous breakdown, or is it the result of underlying physical illness? A careful physical examination shows abnormal deep reflexes, irregular and abnormally reacting pupils, and occasional slurring in speech. These findings are all too often attributed to nervous exhaustion, but to the well-trained physician, who has been thoroughly grounded in medical school in the close relationship of physical disorders and mental reactions, they indicate the need for a laboratory examination of the blood and spinal fluid. This examination makes evident the diagnosis of general paresis, and the appropriate treatment for this disease may then be administered. Before we knew that this particular mental disorder was due to syphilis of the nervous system, the treatment was unavailing and the patient died a lingering and pathetic death in about two years. Today, with our knowledge of etiology and modern methods of treatment, the result in the majority of cases is very favorable.

This case illustrates the relationship be-

tween bodily disease and mental symptoms, and teaches the student that a good history and an understanding of the patient's psychologic make-up are necessary to explain the overactive, grandiose mental picture which developed when the normal inhibitory mechanisms were relaxed by disease. With such a case for teaching material, the instructor can discuss the whole subject of somatic and psychologic inter-relationships, and show the student how an accurate diagnosis is essential to adequate and effective treatment. The necessity for a thorough knowledge of nervous pathways, the method of attack and development of invading organisms, and the devastating results upon personality structure can be clearly illustrated.

Emphasis on the "Total Personality"

We have heard a great deal through the past years about the necessity of imparting to the medical student an understanding of the "total personality." Certainly the best teacher of psychiatry must make his pupils realize the need for obtaining psychologic, biologic and sociologic facts, and teach them how to put that factual material together to give a picture that makes of the patient a human being. The psychologic facts must include all his background of success or frustration, repression or regression, evasion or the attempt to face reality, as well as his insight. On the biologic side, the disfiguring facial birthmark, the handicap of diabetes, the deformity of infantile paralysis must be related to certain problems of behavior and to the patient's attempts at adjustment. The sociologic history includes the side of the railroad tracks on which the patient lives, the kind of group he is thrown with, the influence of poverty and bad housing. All these factors affect personality structure and must be given proper consideration in determining the causes of abnormal behavior.

Emphasis on "Psychosomatic Medicine"

We hear much of a recently coined term, "psychosomatic medicine." The psychiatrist has long understood that an injury to the knee may be related to behavior disturbances in certain individuals, and that mild or severe heart disease may sometimes produce emotional difficulties. We know too that prolonged emotional disturbances often create somatic disorders—for example, peptic

ulcers. As Dr. Edward A. Strecker has recently said,

"The real beginning of psychosomatics must be made in the preclinical years of medical education. Medicine not only has its physics or somatics but also its 'psychics' or psychogenetics. There could be a true and helpful teaching parallel. In anatomy there are livers, hearts and spleens. So too is there an anatomy of psychology to be studied, consisting of normal emotions, consciousness, memory and the like. There is a physiology which teaches how organs work. So too should there be taught a physiology of how mental functions work. Paralleling histology, the microscopic study of normal organs and tissues, the student should be made familiar with the finer divisions of mental functioning; for instance, remote and recent memory, the gradations of normal consciousness, the variety of emotional shadings and their somatic profiles. When the Department of Pathology is demonstrating gross morbid lesions, syphilitic aortitis, liver abscess and what not, the Department of Psychiatry should be demonstrating the gross pathology of the mind, pronounced emotional deviations such as profound melancholia or rage and fear with their component bodily expressions. Likewise should there be dual teaching of microscopic pathology, on the one hand, let us say, the study of a cross section of an arteriosclerotic vessel or the walls of an abscess, on the other a span of amnesia or the psychosomatics of anxiety due to repressed emotional conflicts.

"If the loaf of medical practice is to be thoroughly leavened, the medical student must be given from the very first week in medical school the opportunity of studying all of man and not only a hypothetical somatic half."⁽¹⁾

Relation of Psychiatry to Other Fields

The modern medical school must see to it that there is a close relationship between the department of psychiatry and all the other departments. The psychiatric consultations requested by the medical and gynecologic services provide a fruitful opportunity for the training of the senior medical student. The sharing of experiences in both acute and chronic diseases between the medical men and the psychiatrist will produce great advances in the whole psychosomatic field and make for better medicine and better psychiatry. When I speak of the field of medicine, I am including all the medical and surgical specialties as well. The medical student should have instruction in the normal growth and development of children, as well as an understanding of some of the emotional problems of childhood. Thus a close liaison between the department of pediatrics and the department of psychiatry is necessary for the best teaching of both the future pediatrician and the future psychiatrist.

Fundamental training in neuro-anatomy,

neurophysiology, and neuropathology is essential, for an understanding of the nervous pathways and their disorders is necessary to good clinical psychiatry. Just as many of our best internists have developed their diagnostic and therapeutic skills from a knowledge of human pathology, so, I believe, many of our best clinical psychiatrists must proceed to their positions of leadership in the profession by a very thorough understanding of neuro-anatomy and neuropathology.

While the best medical schools do not intend to make psychologists out of their graduates, it is nevertheless extremely important that the students be taught how to work with the psychologist, what important information the psychologist can contribute toward the understanding of human behavior, and how the psychiatrist can help the psychologist in making an accurate interpretation of the results of psychologic tests. From the psychology department, the medical student can gain much valuable instruction in the method of setting up scientific experiments, their control, and their evaluation. For the psychiatrist wishing to do research, this instruction is of the greatest fundamental value.

In teaching psychiatry today, we must give the student far more understanding of social factors and must teach him how to work with the psychiatric social worker. The student must also have some conception of the purpose and value of occupational therapy. A knowledge of the temperament of his patient will enable the doctor to recommend occupational therapy which will fit into the patient's needs and aid his recovery, rather than just occupy his time.

We must teach the student something of cultural anthropology, the differences in race cultures, and the problems of the minority groups. The medical student also needs some indoctrination in the psychiatric problems of industry. The maladjusted industrial worker plays an important part in labor turnover and labor unrest, and industry is calling for well qualified psychiatrists to help in their personnel problems.

Practical Clinical Experience

It almost goes without saying that medical students should have the most careful training in conducting psychiatric interviews, recording factual data, and interpret-

1. Strecker, E. A.: Psychosomatics: The Liaison between Internal Medicine and Psychiatry, J.A.M.A. 134:1520-21 (Aug. 30) 1947.

ing such data. This training can best be obtained either at the bedside of the patient or in the outpatient department, where the student can watch the expert psychiatrist conduct an interview, and can be taught, step by step, how the interpretation is arrived at. Since a large percentage of the patients the psychiatrist is going to see, especially in private practice, will be ambulatory patients, the experience gained in a well conducted neuropsychiatric outpatient department is invaluable.

Conclusion

I need not say to you that the program I have outlined is a big one, and that there are hardly enough hours in the undergraduate medical curriculum to provide adequate time for all this training. Psychiatric indoctrination should start in anatomy and physiology, however, and should go right on through all the courses, special emphasis being placed on clinical experience in the third and fourth years. It is the function of the medical school to train doctors to meet the needs of the community. If the medical school is to fulfill this mission in the highest degree, it must graduate medical students prepared to go on with their postgraduate training in psychiatry and ultimately to meet the great demand that exists today in the field of nervous and mental illnesses. In the past few years many of our schools have modernized their teaching, so that they are making a very great contribution in this direction, and I am sure that the Bowman Gray School of Medicine will take its place as a leader in training medical men to meet these increasing psychiatric needs of our state and nation.

The collection of information relative to a patient's complaint is an art which can be acquired only by constant and serious practice. Much patience and tact, an understanding and sympathetic attitude, and a good deal of time may be necessary in order to get the true facts and place them in proper perspective. Ability of this kind and a practical knowledge of the theory of evidence are absolutely essential for a successful barrister, and hardly less so for the sound practice of medicine.

Much important information can be obtained from an accurately taken history which can be gained in no other way. The early and even the more advanced phases of some diseases may express themselves only in symptoms, and the main or even the only diagnostic evidence reside in the history, for example, in some cases of angina of effort.—Leslie Hurley: *The General Practitioner and the Specialist*, M. J. Australia 1:67 (Jan. 17) 1948.

PSYCHIATRY COMES OF AGE

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Four decades ago, when I entered the field of psychiatry, it was the Cinderella of medicine. Rejected or ignored to a greater or lesser degree by the general public, it was even repudiated by the rest of medicine.

As a matter of fact, I believe I was the only medical student at that time who expressed a definite decision to become a psychiatrist—a departure which the hoary heads of tradition-bound medicine sternly looked upon as becoming an “alienist.” I recall that mental institutions were often referred to as *psychopathic hospitals*—and, with all due respect to those who were struggling even then to improve conditions, I must confess that the institutions really were, for the most part, *very psychopathic!*

Since then, however, Cinderella has been admitted to society. During my professional lifetime as a psychiatrist, I have seen psychiatry become the “specialty-of-the-day.”

I could not be more serious, more in earnest, nor more emphatic than when I say that I have been increasingly alarmed at the lack of discrimination with which newspapers, magazines, books, speakers, movies, and plays bandy psychiatric terminology, pseudo-psychiatric information, and, occasionally, a few psychiatric facts. Psychiatric literature, and public interest in it, is reaching the saturation point.

The Dangers of Popularity

Much as I would like to discuss why and how this sudden popularity came to psychiatry, I will abstain, and will deal only with the concomitant danger to psychiatry's future as a branch of medicine.

After nearly a century of obscurity, psychiatrists have come into their own. In some quarters, their services apparently have been recognized as indispensable. Even the least optimistic admit a growing lay understanding that there is no mystery about the so-called “mental illnesses,” and that the prospect for recovery from several forms of mental illness compares favorably with the prospect of recovery from somatic illnesses.

Read at the dedication exercises held at the opening of Grady's rehabilitation center of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, September 19, 1947.

At the same time, psychiatrists are being called on increasingly to help speed up production in industry, to provide better guidance in schools, to solve the problems of juvenile delinquency—and so on, in just about every walk of life.

The demand for psychiatric counsel and advice is assuming universal proportions. In answer to it, let us make sure we do not respond as "universal specialists"! If we do—by accepting the responsibility for straightening out all the defects in education, and for solving the labor problems in industry and all the political problems of the day, including international relations—we will suffer the consequences.

If we set ourselves up, or should be set up, as the solution to all of man's difficulties, we simply will not be able to deliver the goods—and the fate of those who fail to deliver the goods varies but little, whether "the goods" are psychiatric services or rubber tires. Therein lies the great danger in any public attitude that endows psychiatry with the ability to cure all the ills to which the human body and mind are heir.

The Psychiatrist as a Medical Doctor

The entire world is looking to the present and oncoming generations to produce large-scale, practical ways and means to enrich life and make the stay on this earth more profitable and enjoyable. I am optimistic enough to believe that there will be a better way of life, and I wholeheartedly advocate that those in the field of psychiatry remain alert to see where psychiatrists can be of assistance—not in the role of a universal specialist, not in the role of a second-rate or even a first-rate Houdini, but in the pure and unadorned role of a medical doctor whose contribution is specialized by his knowledge of the human mind.

We must deny any indication that we are equipped to run industry, much less the universe, all by ourselves. The most important thing for the specialist in psychiatry to remember is that he is a medical doctor, and that his contribution as a psychiatrist is primarily that of a medical man. Psychiatrists must think as medical doctors, act as medical doctors, and, above all, *talk* as medical doctors, abandoning terminology and procedures that envelop our specialty with anything reminiscent of the occult or the

mysterious.

If we are to measure up to our opportunities and meet our responsibilities in bringing about a better way of life, we must never forget that as psychiatrists we must maintain a close interrelationship with our medical colleagues, and must talk to our patients in simple language that they will understand and remember. It takes no great mind to make simple things complicated, but it takes a very great mind to make complicated things simple.

Qualifications of a Good Psychiatrist

In this effort, as I said before, every psychiatrist must be a well-informed medical doctor with a thorough working knowledge of the human body. He must also be a good psychologist with a practical understanding of psychologic principles. Thirdly, he must be a sociologist, in that he must be a constant student of the social milieu in which his patients have lived and must live in the future. Fourthly, he must be a vocational guidance specialist; and finally, he must be an educator. I believe that psychotherapy, regardless of the form it assumes, is essentially personal tutoring.

One thing more. We have heard a great deal about the desperate need for more psychiatrists, and I take no issue with those who would increase our numbers, as well as the numbers of psychiatric nurses, psychiatrically oriented social workers, and other adjunctive workers. However, I urge equal attention to the *quality* of those who fill our ranks. Quality counts much more than quantity of personnel in giving psychiatry a fighting chance in its attack on mental illness.

Conclusion

If we base our reasoning on those simple concepts of our responsibility, and diligently apply ourselves in uncompromising scientific efforts, the greatest of all public health problems—that of nervous and mental diseases—will yield before the attack of the fine young medical minds, with their high degree of intellectual curiosity, that are now coming into our field.

The challenge to brawn of a century ago is now generally accepted as having changed to a challenge to brains. Let us keep our feet on the ground. Let us every day knit psychiatry more closely to the other medical

specialties, build it more firmly on scientific medical facts, and make each psychiatrist an individually responsible, serious-minded student and exponent of those facts. On those facts the truly brilliant future of psychiatry rests.

HEMOGLOBINURIC OR TUBULAR NEPHROSIS (ACUTE PAREN- CHYMATOUS NEPHRITIS)

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This presentation originally was planned as a clinicopathologic conference on *hemoglobinuric* or *tubular nephrosis*. On critical examination of our material—didactic, clinical and pathologic—it became evident that another form of presentation is better suited to this subject. Accordingly, your attention is invited to an important syndrome not adequately portrayed in current medical literature. A resume' of its nature and pathogenesis will be followed in this same issue by an article dealing with clinical considerations.

Clinical and Pathologic Descriptions

Internists and pathologists of the previous medical epoch described a form of renal disease which is not discussed in recent textbooks. Osler, in the first edition (1892) of his *PRINCIPLES AND PRACTICE OF MEDICINE*, described "acute Bright's disease" caused by the action of toxic agents upon the kidneys. This condition resulted from poisons, such as turpentine, phenol, and potassium chlorate; from severe infections, such as septicemia, scarlet fever, measles, diphtheria, malaria, yellow fever and others; from toxic effects of unknown origin, such as the toxemias of pregnancy; and from the effects of burns of the skin. Later editions added trauma and extensive surgical procedures to the etiologic conditions.

Osler gave these urinary changes as signs of this condition: The urine is suppressed or greatly reduced; the quantity may be 4 or 5 ounces per day. It is highly colored, dark, smoky or reddish-brown, and it contains blood, albumin and casts; the specific

gravity is high—1.025 or more. These changes are accompanied by uremic symptoms. Progress since Osler's day has added to these signs the progressive retention of nitrogenous waste products in the blood.

Contemporaries of Osler, both internists and pathologists, described this condition under a variety of terms: acute parenchymatous nephritis, acute tubular nephritis, desquamative nephritis, and others. They gave in general the same etiologic conditions listed by Osler. Pathologists were in agreement on the gross and microscopic changes seen in the kidneys. Adami⁽¹⁾ (1909) gave this description of acute parenchymatous nephritis:

"The kidneys usually are enlarged and edematous. The capsule strips with more than usual ease. The kidney substance is swollen and tends to bulge. The surface is pale and the stellate veins injected. The cortex is swollen, pale and cloudy, presenting a marked contrast to the dark red medulla. In some cases the cortex is somewhat congested. Minute petechial hemorrhages can frequently be seen in the cortical surface and throughout the substance.

"Microscopically the structures chiefly affected are the convoluted tubules. The cells are swollen, cloudy or granular, often vacuolated, and the nuclei stain poorly or not at all. Hyaline or granular casts and droplets of albumin may be seen within the lumina. Often the lining cells have desquamated from the basement membrane. In some cases the tubules contain blood. Hemorrhage into Bowman's capsule is noted in some cases, or it may contain red and white corpuscles, albumin and detritus. Free blood and blood casts may appear in the urine. The interstitial tissue is swollen and edematous and sometimes there is a small amount of round-celled infiltration and a deposit of fibrin in the interstitial stroma. The extent of the lesions varies in different cases. It is sometimes impossible to draw the line between cloudy swelling and this form of nephritis."

In examinations of material from over 200 cases of this syndrome, I have found no important items which should be added to Adami's description.

Some thirty years ago, a new classification and nomenclature of renal diseases was proposed, based upon the work of Volhard and Fahr. For reasons unknown, "parenchymatous nephritis" was not described as an entity, nor was any name suggested for it. This new classification was widely adopted, and "parenchymatous nephritis" was lost from sight. For a time some internists (McCrae, Tice) still described that clinical syndrome, but most physicians of the present time either are ignorant of the condition or have learned of it in the school of experience.

* Presented at the Watts Hospital Symposium, Durham, February 11, 1948.

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1. Adami, J. G., and Nicholls, A. G.: *Principles of Pathology*, Philadelphia, Lea & Febiger, 1909, v. 2, pp. 740-743.

Relation to Shock

My interest in this subject was aroused incidentally. In the course of studies on the pathology of shock⁽²⁾, it was noted that the kidneys regularly showed extensive tubular degeneration, ranging to necrosis. They presented the complete picture described by Adami and his contemporaries. The clinical findings in such cases had included urinary suppression and dark or pigmented urine of high specific gravity containing albumin, epithelial cells, casts and debris, and usually erythrocytes and hemoglobin pigment as well. These features were as described by Osler. They accompanied a progressive increase in blood urea leading, in severe cases, to death by uremia.

Our studies have shown that the occurrence of shock is not limited to severe injuries, burns, and the aftermath of extensive surgery. This finding now is widely supported. Reviewing the subject of shock, Harkins⁽³⁾ listed more than thirty conditions in which it may occur. These included extensive surgery; trauma; burning; freezing; radiation burns; sunburn; heat stroke; asphyxia; thrombosis; intestinal strangulation; bile peritonitis; perforated gastric ulcer; pancreatitis; various poisons such as bichloride of mercury, arsenicals, phenol, barbiturates and others; snake venoms; anaphylaxis; transfusion reactions; systemic diseases such as diabetic coma, eclampsia, and toxic jaundice; severe infections such as cholera, diphtheria, pneumonia, and peritonitis; gas gangrene; and various anesthetic agents. I have verified the occurrence of shock in each of these conditions and in others not mentioned.

Shock is a form of circulatory failure which occurs in varying degrees. When severe or profound, it tends to progress inexorably to death; when it is slight or mild, recovery usually follows. When shock is of intermediate or sublethal degree, the patient may live for several days until death occurs as a result of renal failure or terminal pneumonia.

This is the degree of shock which regularly is accompanied by the clinical signs

of renal disturbances described by our predecessors in medicine and in pathology. It arises not only in the conditions mentioned by Osler, but in numerous others. As a cause for uremic manifestations, it outranks all others. Deaths from renal insufficiency are due to this cause more frequently than to any other form of renal disorder. Much confusion has arisen as a result of omitting this syndrome from consideration. Many authors have reported deaths from renal failure of this type, not recognizing its relationship to shock and to this form of nephropathy with which our predecessors were familiar.

For example, the "liver deaths" or deaths from the "hepatorenal syndrome" known to surgeons are instances of sublethal shock with renal failure resulting from extensive abdominal operations or from injury to the liver. The "crush syndrome" which Bywaters⁽⁴⁾ described is sublethal shock resulting from ischemic necrosis caused by prolonged pressure upon muscles. Bell⁽⁵⁾ discussed as "clinical acute nephritis" numerous instances of uremic death not due to glomerular nephritis nor to other organic disease of the kidneys. His observations were made in cases of major surgical procedures, trauma plus infection, barbiturate poisoning, icterus gravis, diabetic coma, pancreatitis, ileus, streptococcal cellulitis, cholangitis, and transfusions with incompatible blood. Shock was recognized clinically in some of these cases.

Recently Lucké⁽⁶⁾ reported observations on "the lower nephron syndrome." He cited more than 400 cases from material studied in the Army Institute of Pathology. These resulted from battle wounds, crush injuries, surgical operations, burns, transfusion reactions, infections, sulfonamide intoxication, poisons, heat stroke, malaria, eclampsia, pancreatitis, and shock from other causes. The clinical signs were oliguria; dark or bloody urine containing pigment, albumin and casts; and progressive azotemia, hypertension, edema and uremia. The pathologic findings in the kidneys were those described by Adami with one important exception: On microscopic study, Lucké found the degen-

2. (a) Moon, V. H., and Kennedy, P. J.: The Pathology of Shock. *Arch. Path.* 14:360-371 (Sept.) 1932; (b) Moon, V. H.: Shock: Its Dynamics, Occurrence and Management. Philadelphia, Lea & Febiger, 1942, ch. 9 and 13.

3. Harkins, H. N.: Recent Advances in the Study and Management of Traumatic Shock. *Surgery* 9:159 (March) 1911.

4. Bywaters, E. G. L.: Effects on Kidney of Limb Compression. *Brit. M. J.* 2:884 (Dec. 20) 1941.

5. Bell, E. T.: (a) Pathology and Pathogenesis of Clinical Acute Nephritis. *Am. J. Path.* 13:497-552 (July) 1937; (b) Renal Diseases. Philadelphia, Lea & Febiger, 1946, pp. 254-264.

6. Lucké, B.: Lower Nephron Nephrosis. *Mil. Surgeon* 99: 371-396 (Nov.) 1946.

eration and necrosis sharply limited to the lower segment of the tubules. Others have reported equal or greater involvement of the upper portion.

More recently, Mallory⁽⁷⁾ described this condition as "hemoglobinuric nephrosis." Cases of shock from wounds, burns, heat stroke, crush syndrome, high altitude anoxia, transfusion reactions, and other causes were studied in army hospitals. He stated that the first effect of shock upon renal function was oliguria, followed quickly by retention of nitrogenous wastes. Constant features were oliguria, azotemia, pigment and albumin in an acid urine, and fixation of specific gravity at a low level. In the last particular, his data differ from those of others, who report a concentrated urine of high specific gravity. The severity of the renal deficiency was proportional, in most cases, to the degree of shock. In severe shock, fatal uremia developed in 33 per cent of the cases; after mild shock the mortality was 11 per cent. Mallory described histologic details, but did not stress degeneration of the convoluted tubules, as other writers have. His report supplies additional data confirming the occurrence and the characteristic features of this syndrome.

Case Reports

A few illustrative cases will be cited:

Case 1

Resection of a rectal carcinoma, performed under spinal anesthesia on a man aged 59, "was followed immediately by marked shock from which he did not entirely recover." Repeated transfusions of blood and of plasma did not restore circulatory efficiency. The blood pressure fluctuated between 60 and 100 systolic. Urination was almost completely suppressed. The nonprotein nitrogen and creatinine rose progressively, and death occurred on the fourth day. The clinical diagnosis was uremia secondary to severe postoperative shock.

The kidneys weighed 210 and 190 Gm.; the subcapsular vessels were engorged; the cortex was thickened, opaque, and pink. The tubular epithelium showed granular degeneration, decided vacuolization, and beginning necrosis, which involved chiefly the upper segment. The tubules contained debris and desquamated epithelium, and there was moderate edema of the stroma.

Case 2

This young man's clothing was saturated with gasoline and ignited. He sustained first, second, and third degree burns of the entire body. Treatment for shock with morphine, plasma, and dextrose-saline injections was begun at once; the burned areas were debrided, and pressure dressings were

applied. The urine was scanty and dark; it contained albumin, red blood cells, and blood casts. On the fourth day the total output was only 200 cc. of coffee-colored urine. No chemical determinations were made. Death occurred at the end of the fourth day.

The visceral findings at necropsy were those usually seen after death from burns. The kidneys weighed 200 and 240 Gm. respectively; they were soft, swollen, and grayish pink; the cortical markings were obscure, and the superficial vessels were engorged. Amorphous material was present in the capsular spaces. The tubular epithelium showed advanced degenerative changes; it was low cuboidal in form, and the lumina contained debris and casts consisting of red blood cells, hyaline, and dark brown pigment.

It is commonly known that severe *infections* of various types often disturb renal function. This effect seems to depend on the severity rather than on the type of the infection. Numerous accounts of febrile albuminuria may be found; only occasionally did the authors of such articles recognize a relationship to shock. The following case is an example.

Case 3

A severe illness with moderate leukocytosis and a temperature of 103 to 104 F. was treated with sulfonamide drugs and penicillin without effect. The patient's blood pressure declined to 80 systolic, 60 diastolic. He became anuric, and uremic crystals covered the cutaneous surfaces. On the eleventh day of illness the nonprotein nitrogen rose to 288 mg. and the creatinine to 6.6 mg. per 100 cc. of blood. He died in coma on the twelfth day. From the character of the illness and the postmortem observations a provisional diagnosis of systemic tularemia was made.

The necropsy revealed numerous scattered nodules in the lungs and spleen. These contained necrotic areas, fibrin, and monocytic infiltration, such as occur in tularemic inflammation. The spleen and liver were enlarged; the viscera were hyperemic. The kidneys were moderately swollen and contained capillary hemorrhages. There was extensive degeneration and necrosis, especially severe in the proximal portion of the convoluted tubules. The lumina contained debris and casts, both hyaline and granular. These features were of the same order as those seen in renal deficiency from other causes.

It is well known that either *hyperthermia* or *heat stroke* may cause circulatory collapse; in some instances the subject may survive several days in a state of sublethal shock accompanied by renal deficiency. The following case report is an instance.

Case 4

Circulatory collapse developed in this man after six hours at 107 F. in hyperthermic treatment for gonorrhea. On his removal from the cabinet the blood pressure fell to 50 systolic, 30 diastolic. The pulse rate was 156, and the urea nitrogen of the blood was 22 mg. per 100 cc. Oliguria and albuminuria were present, and the urine contained erythrocytes and casts. Supportive treatment was ineffective; the circulatory deficiency continued, and the blood urea nitrogen rose to 77 mg. per 100 cc. Death

7. Mallory, T. B.: Hemoglobinuric Nephrosis in Traumatic Shock, *Am. J. Clin. Path.* 17:427-443 (June) 1947.

came ninety-eight hours after the therapeutic hyperthermia.

As is usual in such cases, the visceral findings were those characteristic of secondary shock. The kidneys, weighing 240 and 250 Gm., were swollen and reddish brown. The cortical markings were obscure, and the pelvic lining contained petechial hemorrhages. Microscopically, both cortex and medulla were hyperemic. The tubular epithelium was severely degenerated; the lumina were wide and contained debris and desquamated cells; the collecting tubules contained casts and many erythrocytes. The stroma was edematous.

In military aviation at *high altitudes*, circulatory collapse resembling surgical shock often developed even though oxygen was adequately supplied. "The most dangerous aspects are seen after a latent period of one to six hours, resulting in a full-blown vicious circle of peripheral circulatory insufficiency, tissue anoxia and marked hemoconcentration."⁸ I had the opportunity to examine the records and material in 5 such cases. The following is a typical example.

Case 5

This man was undergoing a test in the low-pressure chamber at a relative altitude of 38,000 feet, when pains and distress developed. After gradual recompression he seemed drowsy and incoherent, and was put to bed immediately. The pulse rate then was 80, and the blood pressure 110 systolic, 80 diastolic. Severe circulatory deficiency developed four hours later. The pulse could not be obtained; the hematocrit reading had risen to 64.9; the patient was sweating, and apparently was in profound shock. He was given plasma and isotonic solution of sodium chloride intravenously, and oxygen by inhalation. Severe hyperpyrexia developed, like that which accompanies heat stroke; the rectal temperature rose to 108.4 F. The urine was scanty and contained albumin (4 plus). No blood chemical tests were made. Despite the administration of intravenous fluids and other measures, the circulatory deficiency persisted; death came forty-five hours after the patient's removal from the low-pressure chamber.

The necropsy observations were the same as those seen in secondary shock from other causes. Microscopic examination of the kidneys revealed the identical pattern of changes seen in the crush syndrome or after transfusion with incompatible blood. It is significant that numerous pigmented casts were found, although no transfusions and no therapy with sulfonamide compounds or other drugs had been given.

Space is lacking for details of other instances. These would include intestinal obstruction, peritonitis, perforation of viscera, coronary occlusion, radiation sickness, toxic jaundice, transfusion reaction, anaphylaxis, poisoning with various chemicals, reaction to arsenical therapy, overdoses of sedatives and of sulfonamide drugs, diabetic crises and others. Each of these conditions, if its severity is maximal, will result in the syn-

drome of shock leading to death. Each of them, when less severe, may cause the syndrome of uremia leading to delayed death. The morphologic changes in the kidneys are of the same pattern, regardless of the causative condition.

Pathogenesis

The exact mechanism by which renal failure develops under the conditions mentioned has not yet been shown, although several explanations have been advanced. It was suggested that the collecting tubules become plugged with pigment, cells, debris and casts; that these obstruct mechanically the outflow of urine from kidneys otherwise functioning normally. This explanation is not consistent with the fact that only a relatively small proportion of the tubules are obstructed. I have never seen an instance in which 20 per cent of the tubules were plugged. The remaining 80 per cent with unobstructed outflow should be sufficient to prevent death by urinary retention.

Some have emphasized that kidneys cannot form urine when the blood pressure is low. This explanation is sound physiologically when the arterial pressure is abnormally and continuously reduced. In many instances, however, the clinical records show that the blood pressure was maintained at adequate levels by intravenous fluids, transfusions, and other means. In such cases, adequate arterial pressure did not prevent fatal renal insufficiency.

It has been noted that hemoconcentration often is marked during shock, and that the glomeruli cannot produce a filtrate from abnormally concentrated blood. In many cases, however, hemoconcentration either was not present or had been corrected by fluids given intravenously; yet renal insufficiency progressed to a fatal termination.

Lack of oxygen—anoxia—has now been accepted as a regular feature of shock. This may develop as a systemic condition, or it may affect chiefly the kidneys as a result of reduced arterial blood flow through them. In either case, renal function cannot be maintained in the absence of an adequate supply of oxygen. Lack of oxygen is probably an important factor in renal failure complicating sublethal shock.

Years ago, Richards⁹ and his associates

8. Physiology of Flight, Air Forces Manual 25-2, United States War Department, Army Air Forces, 1945, pp. 17 and 36.

9. Richards, A. N.: Direct Observations of Change in Function of the Renal Tubule, Caused by Certain Poisons. Tr. A. Am. Physicians 44:64-67, 1929.

showed that poisons, such as bichloride of mercury and others, caused degeneration and necrosis of the tubular epithelium. This development was followed by suppression of urine and by death. They found that degeneration of the epithelium reduced its function of selective absorption by which the glomerular filtrate is concentrated. The epithelium, if damaged, allowed the entire filtrate to be resorbed into the circulation by a process of diffusion. This resorption caused marked oliguria or anuria by interrupting the process by which the urine is formed.

Probably the two last mechanisms are most important in this syndrome. Anoxia of itself will reduce renal function directly. It will also cause degeneration of tubular epithelium, bringing into action the process described by Richards.

Terminology

Confusion as to terminology will continue until common usage sanctions a suitable name designating this syndrome. The term *toxic nephrosis* is open to the objection that, in many instances, no toxic agent is implicated. In shock from anaphylaxis, from transfusion with incompatible blood, from therapeutic hyperthermia or heat stroke, from low atmospheric pressure, from anoxia or asphyxia, no toxic effects seem probable. The term *hemoglobinuric nephrosis* is free from objection and has the merit of designating an important sign of the condition—hemoglobinuria. *Tubular nephrosis* likewise is acceptable, suggesting the chief pathologic lesion. The term *parenchymatous nephritis* has historic significance, as it was applied to this syndrome by our predecessors. Unfortunately it implies an *inflammatory* feature which is lacking in this form of renal disturbance.

Summary

A form of renal insufficiency which is associated with a sublethal degree of shock resulting from various causes produces uremic deaths more frequently than do organic diseases of the kidneys.

Renal failure probably is due to degeneration and necrosis of tubular epithelium, which may result from reduced arterial circulation, anoxia, or toxic agents. Such degeneration interrupts the formation of urine.

TUBULAR NEPHROSIS

Clinical Considerations

GARFIELD G. DUNCAN, M.D.*

PHILADELPHIA

The important clinical considerations concerning the so-called extrarenal azotemia or tubular nephrosis syndrome are its *cause*, its *recognition*, its *prevention*, and its *treatment*. The mechanisms set in motion by the various conditions associated with shock have been considered by Dr. Moon. An understanding of these mechanisms is essential as a basis for the clinical management of this syndrome.

Recognition

Oliguria (or anuria), azotemia, hypertension, and the passing of granular and pigmented casts in the urine following clinical crises are characteristics of acute tubular nephrosis. The oliguria may be transitory, especially in the cases of dehydration. In such cases it is indicative of an effective protective mechanism thrown into operation to prevent reduction of blood volume. As the urine volume falls below 500 cc., however, the danger of grave disturbances in renal function increases.

The onset of anuria may be sudden, as following peripheral vascular collapse during surgery; or oliguria may develop gradually following the precipitating crisis. In the latter instance, the urine, in the early stages, has a high specific gravity, and contains red blood cells, and granular and pigmented casts. As the oliguria persists, in spite of an increased fluid intake, the specific gravity of the highly acid urine falls to relatively fixed levels—between 1.008 and 1.011. Concomitantly the blood pressure, previously subnormal, increases to 160 systolic, 100 diastolic or thereabouts, and the urea nitrogen value of the blood increases from the normal of 12-15 mg. per 100 cc. to uremic levels. Lucke⁽¹⁾ has estimated the mortality rate in such cases to be approximately 90 per cent. In those cases in which recovery is achieved,

*Presented at the Watts Hospital Symposium, Durham, February 11, 1948.

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1. Lucke, B.: Lower Nephron Nephrosis. *Mil. Surgeon* 99: 371-396 (Nov.) 1946.

the secretion of urine is resumed gradually, after variable periods of anuria. The blood urea nitrogen values return to normal over a period of five to fifteen days, and normal blood pressure readings are restored. The specific gravity of the urine remains fixed at the low level for weeks or months, and sometimes it is several years before it returns to normal. That the specific gravity usually does return to normal, even after a great lapse of time, is an indication of what can be expected in the way of repair of tubular damage; in contrast, predominant glomerular damage results in permanent impairment of function.

Edema is a variable feature and is often related to the therapy employed.

Cause

In considering the disturbed physiology of acute tubular nephrosis we recall that Trueta and his coworkers⁽²⁾ discovered that, during experimental shock, the cortical glomeruli of the kidney are by-passed by a short-circuiting of the blood flow *via* a medullary route. The blood flows through the juxta-medullary glomeruli, their efferent vessels, and their respective vasa recta to the interlobular veins. This hypothesis, so convincingly presented, indicates that oliguria and anuria result from neurogenic vascular spasm, which prevents blood from reaching the cortical glomeruli in sufficient quantity to permit a normal amount of urine to be excreted. If this is the phenomenon responsible for the development of so-called extrarenal azotemia—and it appears quite probable that it is—we shall be obliged to abandon the theory of complete tubular absorption in anuric patients. It is quite feasible too, and in accord with Trueta's observations, that the correction of anuria and oliguria coincides with the return of an adequate circulation through the cortical glomeruli, but that the tubules, having suffered from anoxia, fail in their more highly specialized function of concentrating the urine.

Prevention

Many circumstances influence the occurrence of tubular nephrosis. In my experience most of the fatalities have occurred in post-

operative cases, and, in some, transfusions of whole blood had been given. The importance of proper matching of blood need hardly be mentioned. I have never seen a case of tubular nephrosis in patients receiving sulfonamides, if two simple rules were observed: (1) the patient must pass at least 1500 cc. of urine per day, and (2) at least one specimen in each twenty-four hours must be alkaline in reaction.

The prevention of shock is not always possible. Patients are often in severe shock when first seen by the physician. Appropriate attention to the nutritional status makes it possible to reduce remarkably the susceptibility to shock, and hence to tubular nephrosis, in patients undergoing surgery. When the prevalent practice of prescribing or permitting semi-starvation during acute and chronic infections is abandoned, further progress in this direction can be expected. Lyons⁽³⁾, Gregersen⁽⁴⁾, Evans⁽⁵⁾, and Ling and Sprinz⁽⁶⁾ have found a definite relationship between loss of weight and susceptibility to surgical shock. Lyons found that patients who lost weight suffered, at the same time, a decrease in blood volume which masked reductions in the total circulating hemoglobin, red blood cells, and protein. Hence, in such patients, normal red cell counts and normal protein and hemoglobin concentrations should be accepted as such only if the blood volume is found to be normal also. Operative procedures should be done *after*, not *before*, the blood volume is corrected by transfusions of whole blood.

Much harm has been done by severely restricting protein in the treatments for cardiovascular and renal diseases, for acute and chronic diseases of the liver, and for surgical conditions. All are agreed that starvation for protracted periods increases the surgical risk. Protein and calorie depletion played a prominent part in Lyons' and Ling's patients, many of whom were malnourished soldiers with chronic suppurating wounds. Ling and Sprinz found, in these patients, an average reduction in blood volume of 1430

2. (a) Trueta, J. and others: Studies of the Renal Circulation, Charles C. Thomas, Springfield, Ill., 1947; (b) Trueta, J. and others: Renal Pathology in the Light of Recent Neurovascular Studies, *Lancet* 2:237-238 (Aug. 17) 1946.

3. (a) Lyons, C.: Penicillin Therapy of Surgical Infections in the United States Army, *J.A.M.A.* 123:1007-1018 (Dec. 18) 1943; (b) Lyons, C. and Mayerson, H. S.: The Surgical Significance of Hemoglobin Deficiency in Protein Depletion, *J.A.M.A.* 135:9-11 (Sept. 6) 1947.

4. Personal communication to Ling (6).

5. Evans, E. I.: Discussion of Lyons (3b).

6. Ling, W. S. M. and Sprinz, H.: Blood Volume Changes of Available (Thiocyanate) Fluid Space in Soldiers with Chronic Wound Infections and Associated Nutritional Depletion, *Am. J. M. Sc.*, in press.

cc., or 24.2 per cent. Evans⁽⁵⁾ found that approximately 50 per cent of hospitalized patients have reduced blood volumes, and Lyons⁽⁶⁾ has verified this finding in cases of chronic infections, hepatic insufficiency, undernutrition, and malignant tumors.

Patients admitted to hospitals present all phases of undernutrition, which in some cases may be due to bizarre and inadequate therapeutic diets. During the course of pregnancy, lactation, organic disease, and infection, patients are more vulnerable to the untoward effects of undernutrition. Eclampsia is a nutritional problem, and the changes in the kidneys of the eclamptic patient fall into the tubular nephrosis group.

It is established that malnutrition plays an important part in predisposing to surgical shock^(3b,5) and eclampsia⁽⁷⁾. It is reasonable to suppose that it may be a factor in the production of tubular nephrosis from other causes. In this connection the results of a nutrition survey made recently at the Pennsylvania Hospital⁽⁸⁾ are pertinent. The nutrient intake of each patient on each ward was evaluated for two successive days. All food delivered to each patient and all leftovers were weighed. These studies, which covered the medical, surgical, and obstetric and gynecologic divisions, indicated that hospitalized patients frequently do not eat an adequate diet. Consider the surgical risk of a patient suffering from bronchiectasis whose daily intake was 29 Gm. of protein and 753 calories.

Case Reports

Case 1

A 39-year-old man was admitted to the Pennsylvania Hospital on September 9, 1947, complaining of loss of weight and severe cough of five years' duration, and the expectoration of approximately 8 ounces of purulent sputum daily. He had fever, severe sweats, and leukocytosis. Roentgenograms showed an abscess cavity in the right upper lobe with considerable pulmonary atelectasis.

Some improvement followed penicillin therapy, but he continued to have fever, leukocytosis, and large quantities of purulent sputum. Following three transfusions, 1500 cc. in all, the upper and middle lobes of the right lung were removed on December 18. The upper lobe was atelectatic, with extensive chronic and acute pneumonitis and two cavities. The operation was long and difficult, and when it was nearly over the patient went into severe shock. Three and one half liters of whole blood were given before the blood pressure rose to 100 systolic, 80 diastolic.

The patient was **anuric** until the third postoperative day, when 15 cc. containing albumin (3 plus), red blood cells, and granular and pigmented casts were excreted. On the fourth day 30 cc. were passed, and on the fifth 210 cc., having a specific gravity of 1.010. On the sixth day the urine volume was 310 cc.; on the eighth day 1540 cc. The twenty-four hour excretion on the ninth day amounted to 1480 cc. with a specific gravity of 1.010, and containing only 1.65 Gm. of sodium chloride and 2.5 Gm. of urea. The urine volume remained satisfactory thereafter, but the specific gravity has remained low—between 1.006 and 1.012.

The blood **urea nitrogen** concentration, which was normal (14 mg. per 100 cc.) before operation, increased steadily to 225 mg. per 100 cc. on the eighth day, when the **creatinine** was 8.2 mg. per 100 cc. Thereafter, the values decreased, the creatinine value being 1.7 mg. on the thirteenth day and the blood urea nitrogen 22 mg. one month after operation. The **blood chloride** values were not abnormal. On the third postoperative day the **total base** had increased to 179 milli-equivalents per liter (Sunderman's method), and eighteen hours later to 193. Following mild diarrhea it fell to 179 on the fourth day, but increased to 191 on the fifth day. Again, following looseness of the bowels, the total base fell to 160 on the sixth postoperative day. The carbon-dioxide **combining power** did not decrease with the reduction in the total base. The values were 33 volumes per cent on the fourth, and 36 and 37 volumes per cent on the sixth postoperative day, when the total base had been reduced to 160 milli-equivalents. On the eleventh day the carbon dioxide combining power was 39 volumes per cent, and the total base 152 milli-equivalents per liter.

The **specific gravity of the blood** following the administration of heparin was reduced to 1.051 on the evening of the second postoperative day, after extensive hydration. On the third day the following values were noted: 2 a.m., 1.055; 11 a.m., 1.056; and 1:30 p.m. 1.050. The specific gravity increased to 1.060 on the sixth day, but with increased hydration, values of 1.049 and 1.046 were noted on the sixth and eighth days respectively.

The **blood volume** on the evening of the second day was 5490 cc., as compared with the calculated normal of 5600 cc., and the hematocrit was 51 per cent. The plasma volume was 2691 cc. (normal 2744 cc.). On the third day the blood volume had decreased to 4110 cc. and the plasma to 2401 cc. It was at that time that a few crackling rales were noted at the base of the left lung, and on the following day edema of the extremities was detected. Following the administration of 100 Gm. of concentrated human albumin, the blood volume was restored to 5500 cc. on the fifth day.

The **serum protein** values were at no time significantly abnormal. The **bilirubin** value on the second postoperative day was 2.7 mg. per 100 cc.

The clinical condition of this patient improved for a short time—two days—after the state of shock had been corrected, but thereafter he became increasingly drowsy and irrational until the kidney function was restored. Hiccoughs and nausea were troublesome. The **blood pressure** prior to operation was normal; following the period of shock it gradually increased to 160 systolic, 100 diastolic on the third day, and subsequently fell gradually to normal levels.

In summary, this patient had suffered from a chronic infection for several years and had become malnourished, so that he was a good candidate for so-called "chronic

7. Tompkins, W. T.: The Significance of Nutritional Deficiency in Pregnancy: A Preliminary Report. *J. Internat. Coll. Surgeons* 1:147-153 (April) 1941.

8. Duncan, G. G., and Ling, W. S. M.: Some Nutritional Hazards in a General Hospital. *Tr. Assoc. Am. Physicians* 66:208-217, 1947.

shock." Acute shock, with evidence of hemolysis following large transfusions of whole blood, predisposed to the rapid development of acute tubular nephrosis.

Case 2

A white woman, aged 37 years, was admitted to the Pennsylvania Hospital on November 10, 1947, eight days after operation for appendicitis in another hospital. After receiving a transfusion of whole blood she had voided no urine for five days, and had become comatose. On the day of admission she had regained consciousness, but was drowsy, and hiccoughs were troublesome. One hundred and fifty cc. of bloody urine, having a specific gravity of 1.008 and containing 3.5 Gm. of urea, were obtained by catheter on the day of admission. Increasing amounts were voided on successive days, as follows: 620 cc., 750 cc., 1435 cc., and 1620 cc. All specimens had a low specific gravity. The patient had a low-grade fever, a purulent discharge from her appendectomy wound, and leukocytosis.

On the second hospital day a pulmonary embolism occurred, and for several hours the prognosis appeared hopeless. Although heparin therapy was begun at once, the coagulation time was allowed to fall below twenty minutes, and on the fourth hospital day another pulmonary embolism occurred. At this time a rapidly progressive edema of the vulva was detected and a diagnosis of thrombophlebitis of the pelvic veins was made.

Classic signs of cardiac failure, which yielded to digitalis therapy, were noted on the sixth day. Following the development of a pelvic abscess, which ruptured into the vagina, her recovery was uneventful, except for an attack of pyelonephritis due to *Bacillus coli*. She was discharged on December 7, after twenty-seven days of hospitalization.

The blood pressure during the oliguric phase was as high as 156 systolic, 110 diastolic, but before discharge, levels of 140 systolic, 70 diastolic and 132 systolic, 78 diastolic were noted. The specific gravity of the urine was low, 1.010-1.012, during the oliguric phase, but readings of 1.020 and 1.021 were recorded prior to discharge. The blood urea fell steadily from 133 mg. per 100 cc. on admission to 21 before discharge, and the creatinine from 7.5 to 1.4 mg. The carbon dioxide combining power was 37

volumes per cent (16.6 milli-equivalents) on admission. On the following day it was 35 (15.7 milli-equivalents), and twenty-four hours later it was 71 volumes per cent (32 milli-equivalents). The total blood proteins varied from 4.8 to 5.6 per cent. The total blood volume on the second day in the hospital was 5,633 cc. (normal approximately 5,500); the plasma volume was 3,380 (normal approximately 3,255), and the hematocrit 40 per cent. The blood sodium chloride values were low—476 mg. (81 milli-equivalents per 100 cc.), and 484 mg. (83 milli-equivalents)—during the first two days in the hospital.

Treatment

No two patients suffering from the azotemia of acute tubular nephrosis will be treated in exactly the same manner. Each of the several combinations of chemical abnormalities will indicate appropriate therapy (table 1).

The aim is to maintain a suitable, constant environment to the vital tissue cells until healing occurs. To accomplish this requires a team—an internist, a chemist, a genito-urinary surgeon to rule out extrarenal obstruction, and members of the resident staff, one of whom must devote much of his time to the patient during the critical phase, the end of which will be marked by the secretion of a normal volume of urine. The team should begin coordinated operations as soon as oliguria is noted, and *not* after the patient has been anuric for several days and overhydrated in attempts to produce urine.

Laboratory determinations done in batteries to give comparative simultaneous values are imperative for best results. The scattering of determinations leads to confusion and danger.

Table 1

Immediate Therapy Indicated by a Battery of Tests in One Case of Acute Tubular Nephrosis

	Normal Values	Actual Values	Treatment Indicated	Amount Administered
Specific gravity of blood	1.052-1.057	1.039†	*Suspension of red blood cells in saline	650 cc.
Hematocrit (%)	43	25*		
Blood volume (cc.)	4845	4537*		
Plasma volume (cc.)	2565	3630		
R. b. c. volume (cc.)	2280	907*	†Concentrated human albumin (salt free)	75 Gm. (300 cc.)
CO ₂ combining power (vol. %)	55-65	25‡		
Chlorides (milli-eq. per liter)	98-103	103.8		
Plasma proteins (Gm. per 100 cc.)	7.1	4.9†		
Plasma albumin (Gm. per 100 cc.)	4.1	2.9†		
Total base (milli-eq. per liter)	140	132‡	‡Sodium lactate solution	400 cc.
Ph	7.3-7.4	7.2‡		
Urea N (mg. per 100 cc.)	10-15	176		
Creatinine (mg. per 100 cc.)	1-1.5	7.02		

The studies considered essential in guiding therapy are:

- a. Hemoglobin
- b. Specific gravity of whole blood
- c. Hematocrit
- d. Blood volume
- e. Carbon dioxide combining power
- f. Chlorides
- g. Plasma proteins and albumin-globulin ratio (one determination)
- h. Total base

This battery of tests is indicated at the outset of treatment and, with the exception of the albumin-globulin ratio, is repeated in twelve hours, and thereafter at twenty-four hour intervals during the anuric phase.

Urea and creatinine concentrations will indicate the course of the disease, but provide little help in therapy.

Agents employed to maintain water and electrolyte balance

The agents employed in controlling water and electrolyte balance until kidney function is resumed are indicated as follows: When the specific gravity of the blood exceeds normal (1.055), the hematocrit value is above 45 per cent, and the blood volume is below the calculated normal, *5 per cent glucose in distilled water* is given until normal values are restored. Varying circumstances will indicate the addition of certain constituents without changing the desired volume of fluid to be administered. If the total base is decreased and the blood volume is normal, *physiologic normal saline*—or, perhaps better, Ringer's solution—is given in quantities not exceeding the amount necessary to bring the total base to normal (ordinarily not in excess of 500 cc.). If the carbon dioxide combining power as well as the total base is depressed, sodium-lactate solution is given to restore satisfactory values.

Plasma may be used to advantage when the plasma protein is depleted and the total base is depressed, although the greater concentration of protein in *concentrated human albumin*, and its freedom from salt, make this the preparation of choice in most cases.

The total amount of fluid to be administered will of necessity vary with the state of hydration and the fluid losses. Overhydration readily leads to pulmonary edema, and doubtless increases the swelling of the kidneys. It is safe to give sufficient fluid, including glucose, albumin, and the indicated

electrolytes, to raise the blood volume to normal. If the blood volume is normal, these vital agents, as indicated, are incorporated in the fluid which is given to replace insensible water loss (loss by way of the lungs, skin, feces, and saliva). This amounts to approximately 1200 cc. per day. To this amount is added sufficient fluid to replace losses by vomiting and diarrhea. The reason for delaying the time-honored flushing of the kidneys is that dilution of the metabolic agents slows up metabolic processes which are basic to healing.

Dr. Olive Hoffman, a member of our team to deal with anuric patients, advocates *catharsis* if the blood volume, total base, and Ph of the blood are elevated. She warns, however, that this is a two-edged sword, and, because of the danger of untoward shifts in the electrolyte balance, should not be employed unless adequate and reliable laboratory data are available. Catharsis is absolutely contraindicated if the total base and Ph are both reduced.

Heparin

In the last 4 patients I have treated for this syndrome I have used heparin. As all have recovered, it seems to have done no harm, and I suspect that it has been beneficial. I make no claims for it, but will present my reasons for using it: (1) Because of the renal stasis and hematuria, and the thromboplastin present in the urine⁹, any therapy which might halt the formation of casts of heme compounds in the renal tubules seems advisable; (2) it was considered probable that the thrombophlebitis occasionally observed in the kidneys of these patients might have a vasospastic effect on the arteries and capillaries similar to that seen in thrombophlebitis of an extremity. For these two probably insufficient reasons we are using heparin in these cases at the Pennsylvania Hospital. It is begun as early as possible—100 mg. being given intravenously at once, and 200 mg. introduced in 1000 cc. of 5 per cent glucose at the rate of eight drops per minute initially. The rate of administration is adjusted to maintain a coagulation time of between thirty and fifty minutes. Coagulation times are determined at four-hour intervals, day and night. It is considered safe to use heparin forty-eight hours

9. Tocantins, L. M., and Lindquist, J. N.: Thromboplastic Activity of Urine, *Proc. Soc. Exper. Biol. & Med.* 65:41 19 (May) 1947.

after surgery. We have had protamine on hand to halt the action of heparin in case of hemorrhage, but have not had to use it. Heparin is discontinued when urine reappears, or when the degree of oliguria is reduced.

Diet

The diet given to the 2 patients whose case reports have been presented in this paper violates time-honored rules. The same violations were observed in 4 other cases—in all, 6 consecutive patients, all of whom recovered. Very small meals were served, nearly all of the prescribed diet being given in a concentrated liquid formula containing salt-free milk, eggs, Protenum and Essenammine. I suspect that the high protein intake was of significant therapeutic value, and that nourishment given frequently aided in preventing intractable nausea and vomiting. The feedings were taken voluntarily when practicable. Otherwise, they were administered by gavage. Nitrogen retention *per se* is not a contraindication to a high-protein diet.

Correction of overhydration

Maintenance of an efficient circulation is extremely important, as the magnitude of disturbance in the renal circulation keeps ahead of that in the general circulation. Cardiac embarrassment and edema are, I fear, usually the result of overhydration. Studies of the venous pressure and circulation time are of value. Venesection, together with the administration of red blood cells and concentrated human albumin, has been life-saving in cases where the blood volume was above normal, with a hematocrit of 25 per cent and a plasma albumin of 2.9 per cent. Digitalis therapy is used when indicated. The partial neutralizing effect of digitalis on heparin increases the difficulties in keeping a uniform coagulation time.

Other measures

Sympathetic nerve block⁽¹⁰⁾ by spinal anesthesia has been effective in restoring renal function in cases of reflex anuria. *Peritoneal lavage*⁽¹¹⁾ is an emergency measure which offers some promise in desperate cases. I have had no experience with it, nor with

Kolff's artificial kidney⁽¹²⁾, which has considerable merit with little risk if its use is guided by adequate laboratory data. The use of *extra-abdominal intestinal loops* for diuretic purposes has been tried, but has less to support it as a method of therapy than any of the infrequently used measures mentioned above. *Renal decapsulation* may have merit, but this fact is difficult to prove. When all else fails, there can be no legitimate objection to this procedure.

Conclusion

Tubular nephrosis is a common disorder with a high mortality rate. Death usually results, not from uremia, but rather from circulatory disorders precipitated by overhydration, which is preventable if therapy is guided by adequate laboratory studies. Administration of fluid is guided by blood-volume studies. Usually it is restricted or not above basic requirements in the early phases of treatment.

A high protein intake is desirable, as is the judicious use of whole blood, red blood cells, plasma, concentrated human albumin, normal saline, and sodium-lactate solution when specific indications arise. Heparin therapy, until the oliguria begins to improve or anuria is corrected, is suggested.

Reasons have been presented for believing that, with adequate facilities, most of these patients can be saved if the oliguria is recognized early and if overhydration is avoided.

12. Kidney Substitutes, Special Article, *Lancet* 2:726-727 (Nov. 16) 1946.

Gastric and duodenal ulcer.—We have watched these diseases—which were at one time, judging by earlier records of the clinic and the dead-house, relatively rare—becoming in the course of two generations two of the most common of all. Their incidence is still rising. If the combined total of living persons who have or have had an ulcer in America and the British Isles could be computed, they would be found to number not tens or hundreds of thousands but millions. Every endeavour, orthodox and unorthodox, medical and surgical, has been made to discover a cure, but with no very outstanding or encouraging results. Animal and laboratory experiments have carried us but a very little way in the assessment of cause. And yet the causes (for ulcer will probably find its place among the "multiple stress" diseases) must have been developing contemporaneously with the rising incidence. A disease which was once rare can become so again. Until we study the victims of the disease at first hand and in relation to their work, their total occupational experience, their communities, their food, their habits and anxieties, and their innate predispositions, are we likely to obtain the answer to our question? —John A. Ryle: *Social Pathology and the New Era in Medicine*, *Bull. New York Acad. Med.* 23:327 (June) 1947.

10. Hingson, R. A., and others: *New Horizons in Therapeutic Nerve Block in the Treatment of Vascular and Renal Emergencies with Continuous Caudal and Continuous Spinal Analgesia and Anesthesia*, South. Surgeon, 13:586-609 (Aug.) 1947.

11. Abbott, W. E., and Shea, P.: *Treatment of Temporary Renal Insufficiency (Uremia) by Peritoneal Lavage*, *Am. J. M. Sc.* 211:312-319 (March) 1946.

LUNG ABSCESS

A Review of Forty-Nine Cases

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Forty-nine cases of lung abscess were treated on the surgical service of the North Carolina Baptist Hospital from 1941 to 1946, inclusive. The literature is replete with writings on this subject, almost all of which give high mortality rates regardless of the type of therapy employed. In our opinion the immediate operative and postoperative mortality is greater with lung abscess than with any other common pulmonary condition, including carcinoma. The availability of chemotherapeutic and antibiotic agents, the widespread use of supportive blood transfusions, and the great improvements made in the technique of thoracic surgery have failed to reduce appreciably the mortality from pulmonary abscess. In an effort to throw more light on this problem, we have undertaken an analysis of the cases we have treated.

Age, Sex, and Occupation of Patients

The ages of our patients ranged from 4 to 54 years, the average being 32. The age incidence by decades (table 1) is similar to that reported by Woods and McGrath⁽¹⁾ in a review of 71 cases. The highest incidence in our series was in the fifth decade. Some of the textbooks of surgery⁽²⁾ state that the incidence of the disease is highest in the third decade.

Thirty-three of our patients were men, and 16 were women—a ratio of almost exactly 2 to 1 (table 1). This ratio corresponds closely to those reported by other authors^(1,2a).

The occupations of our patients are shown in table 2.

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Read before the Section on Surgery, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 11, 1947.

1. Woods, F. M. and McGrath, E. J.: Management of Pulmonary Abscess. *Surgery*, 20:187-190 (Aug.) 1946.
2. (a) Babcock, W. and others: Principles and Practice of Surgery. Philadelphia, Lea and Febiger, 1944, p. 836; (b) Hedblom, C. A.: Pulmonary Abscess, in *Walters' Practice of Surgery*, Hagerstown, Md., W. F. Prior Co., 1947, v. 3, ch. 2, pp. 1 and 2.

Table 1

Age and Sex of Patients		
Age (Years)	No.	Per Cent
1-9	4	8.2
10-19	8	16.3
20-29	6	12.2
30-39	12	24.5
40-49	14	28.6
50-59	5	10.2
Sex	No.	Per Cent
Males	33	69.4
Females	16	30.6

Table 2

Occupation of Patients		
	No.	Per Cent
Child	11	22.4
Housewife	8	16.3
Textile worker	5	10.2
Farmer	5	10.2
Woodworker	3	6.1
Miscellaneous	17	34.7

Predisposing Factors

Table 3 shows the conditions which were believed to be predisposing factors in this series. Pneumonia preceded the development of lung abscess in 14 of the 49 cases, or 28.5 per cent. The respiratory infections (colds, influenza, and pneumonia) considered as a group were believed to be the pathogenic factor in 26 cases. Pneumococcus pneumonia is not thought to be a cause of lung abscess, but there is evidence to support the belief that pneumonia due to other organisms does produce changes in the lung predisposing to lung abscess. Valle⁽³⁾ reported that 65 per cent of the 244 cases in his series followed pneumonia. Woods and McGrath reported that 33 of their 71 patients (46.4 per cent) developed abscess following pneumonia. D'Ingianni⁽⁴⁾, in discussing the pathogenesis of nontuberculous abscesses in children, reported the incidence of pneumonia as 32.2 per cent. He quoted Derges as saying that the most common cause of lung abscess is previous surgery, and that pneumonia is the next most frequent contributing factor.

There were 7 instances of inhalation of foreign bodies in our series. Four patients developed lung abscesses following tonsillectomy and adenoidectomy. Heavy lifting was given as the predisposing factor in 2 cases.

Early Symptoms (Table 4)

Forty-three of our patients (87.7 per

3. Valle, A. R.: Lung Abscess: An Analysis of 244 Cases. *Surg., Gynec. & Obst.* 81:278-286 (Sept.) 1945.
4. D'Ingianni, V.: Nontuberculous Lung Abscesses in Children: Survey of 64 Cases. *J. Thoracic Surg.* 11:258-264 (June) 1945.

Table 3
Predisposing Factors

	No. Cases	Per Cent
Influenza, colds and pneumonia.....	26	53.1
Aspiration of foreign bodies.....	7	14.3
Tonsillectomy and adenoidectomy.....	4	8.2
Other operations.....	3	6.1
Heavy lifting.....	2	4.1
Gunshot wound of chest.....	1	2.0
Amebiasis.....	1	2.0
Tuberculosis.....	1	2.0
Carcinoma.....	1	2.0
Unknown.....	3	6.1

Table 4
Initial Symptoms

	No. Cases	Per Cent
Cough.....	43	87.7
Foul sputum.....	22	44.9
Pain.....	22	44.9
Fever.....	16	32.6
Hemorrhage.....	3	6.1

Table 5
Duration of Symptoms

Weeks	No. Cases	Per Cent
0-6.....	10	20.4
7-12.....	12	24.5
13-24.....	9	18.4
25-48.....	5	10.2
49 or more.....	13	26.5

cent) stated that cough was one of their first symptoms. Fever, pain in the chest, or expectoration of foul sputum was the initial symptom in 22 cases (44.9 per cent). Three patients had cough with hemoptysis as the first symptom. Only 3 patients had persistent non-productive cough and fever. Hedblom^(2b) and Valle⁽³⁾ commented on the fact that cough is almost always present in cases of lung abscess.

Duration of Symptoms

The duration of symptoms in these cases ranged from two weeks to twenty years (table 5). Only 10 out of the 49 (20.4 per cent) had been sick less than six weeks. Thus, according to Neuhof's classification⁽⁵⁾, 79.6 per cent would be considered as cases of chronic lung abscess. Crimm⁽⁶⁾ and Valle⁽³⁾, on the other hand, do not classify an abscess as chronic until it has existed for more than two months. Brantigan and Looper⁽⁷⁾ found the usual classification of abscesses as acute or chronic to be unsatisfactory. They preferred to use the terms "simple or uncomplicated" and "chronic or complicated." While

Table 6
Location of Abscess

	No. Cases	Per Cent
Single lobe involved		
Right lower.....	11	22.4
Left lower.....	6	12.2
Left upper.....	4	8.2
Right upper.....	2	4.1
Right middle.....	1	2.1
Multiple lobes involved		
Right upper, middle, and lower.....	11	22.4
Right upper and middle.....	6	12.2
Left middle and lower.....	5	10.2
Right middle and lower.....	2	4.1
Multiple bilateral.....	1	2.1

it is true that the classification of lung abscesses on the basis of duration of symptoms is at best somewhat inaccurate, the therapy and prognosis of acute and chronic lung abscesses are not the same; most writers, therefore, have attempted to classify their cases strictly as acute or chronic.

Location of Abscess

In this series abscesses of the right lung predominate by a ratio of almost 2 to 1 (table 6). Thirty-two of the 49 cases (65.3 per cent) occurred on the right side, and 17 (34.7 per cent) on the left. This ratio is similar to those reported by D'Ingianni, Woods and McGrath, and Hedblom. The lower lobe of the right lung was involved much more frequently than the upper. Of the 13 cases confined to either the right upper or the right lower lobe, 11 were in the right lower lobe, and 2 in the right upper lobe. Most of the other reports also state that the right lower lobe is the one most frequently involved, although Cutler and Gross⁽⁸⁾ found a larger number of abscesses in the upper lobe.

Of greatest importance is the fact that multiple lobes of the lungs were involved in 25, or 51 per cent of our 49 cases. This incidence is more than twice that reported by D'Ingianni (25 per cent). Multiple bilateral abscesses were present in 2.1 per cent of our series. This incidence is closely comparable to that reported by Valle (2.5 per cent).

Types of Operations Performed

Operations were performed in 35 of our 49 cases. The procedures employed are listed in table 7. The large number of lobectomies and pneumonectomies was made necessary by the high percentage of chronic abscesses

5. Neuhof, H.: Acute Putrid Abscess of the Lung. *Surg., Gynec. & Obst.* 80:351-354 (April) 1945.

6. Crimm, P. D.: Lung Abscess. *J. Indiana M. A.* 39:17-25 (Jan.) 1946.

7. Brantigan, O. C. and Looper, E. A.: The Etiology and Surgical Treatment of Lung Abscess: Importance of Lobectomy. *South. M. J.* 37:199-207 (April) 1944.

8. Cutler, E. C. and Gross, R. E.: Nontuberculous Abscess of the Lung: Etiology, Treatment, and Results in 90 Cases. *J. Thoracic Surg.* 6:125-155 (Dec.) 1936.

Table 7

Types of Operations Performed and Operative Mortality

Operation	No. Cases	No. Deaths	Cause of Death	Mortality Rate
Pneumonectomy	8	5	Air embolus (2) Abscesses in remaining lung (1) Bronchopleural fistula (1) Spread of tuberculosis (1)	62.5%
Lobectomy (2 lobes)	7	3	Air embolus (1) Hemorrhage (1) Bronchopleural fistula (1)	42.6%
Unroofing of abscess	9	3	Hemorrhage (2) Air embolus (1)	33.3%
Lobectomy (single)	7	1	Bronchopneumonia	14.3%
Tube drainage of abscess	2	0		0
Cautery lobectomy	1	0		0
Inter-rib thoracotomy	1	0		0
TOTAL	35	12		34.3%

and multiple lobe involvement. Unroofing of abscesses (carried out in all cases with the cautery, leaving the abscess lightly packed with iodoform gauze), cautery lobectomy, tube drainage, and inter-rib thoracotomy were usually done in acute and "hyperacute" cases^(5,9). Other writers⁽¹⁰⁾ have pointed out that most acute abscesses can be treated by early surgical drainage, but that once the condition of chronic pulmonary supuration has been reached, cure is rarely possible except by extirpation.

Sweet^(10b) listed the following reasons for choosing primary lobectomy for lung abscesses in 15 cases: chronicity of the disease, 10 cases; hemorrhage, 2 cases; involvement of more than one lobe, 1 case; mistaken diagnosis of carcinoma, 1 case; and abscess located in upper lobe, 1 case. Lindskog⁽¹¹⁾ found primary lung resection the procedure of choice if one or more of the following conditions existed: (1) multiple abscesses or extensive destruction in one or more lobes; (2) secondary bronchiectasis; (3) atelectasis or pneumonitis unrelieved by bronchoscopic treatment; (4) uncontrolled bleeding; and (5) perforation and localized empyema. These writers have done many secondary resections in patients who had persistent disease following drainage of the

abscesses. The indications for lobectomy and pneumonectomy in our series were similar to the ones outlined above.

In table 8 the lobectomies are classified according to the lobe removed. One patient had a right lower lobectomy for a large abscess due to tuberculosis. Of the eight pneumonectomies carried out (table 8), 5 were on the right side and 3 on the left. In one of the patients on whom a left pneumonectomy was done, the abscess was found to be a large area of central necrosis in a bronchogenic carcinoma.

Table 8
Portions of Lungs Resected

	No. Cases	Per Cent
Lobectomies—Lobes Removed		
Left lower	4	28.6
Right lower	3	21.4
Right middle and lower	2	14.3
Right middle and upper	2	14.3
Left upper	2	14.3
Right upper	1	7.1
TOTAL	14	100
Pneumonectomies—Lung Removed		
Right	5	62.5
Left	3	37.5
TOTAL	8	100

Postoperative Complications

The three most common postoperative complications in this series (table 9) were (1) empyema with broncho-pleuro-cutaneous fistula, (2) bronchopleural fistula, and (3) hemorrhage. Brantigan and Looper⁽⁷⁾ reported that broncho-pleuro-cutaneous fistula developed in all but one of 8 cases on which they performed a primary lobectomy for abscess. Iselin^(10a) stated that fistula and sec-

9. Neuhoof, H. and Touroff, A. S. W.: Acute Putrid Abscess of the Lung: Hyperacute Variety. *J. Thoracic Surg.* 12: 98-106 (Oct.) 1942.

10. (a) Shaw, R. R.: Pulmonary Abscess: Value of Early, One-Stage Operation. *J. Thoracic Surg.* 11:453-466 (April) 1942; (b) Sweet, R. H.: An Analysis of the Massachusetts General Hospital Cases of Lung Abscess from 1938 through 1942. *Surg., Gynec. & Obst.* 80:568-574 (June) 1945; (c) Brown, C. J. O.: Putrid Lung Abscess. *M. J. Australia* 1:107-109 (Jan. 26) 1946; (d) Iselin, M.: Les absces du poulmon d'apres 16 cas operes. *Presse med.* 51:197-199 (March 30) 1946.

11. Lindskog, G. E.: The Surgical Treatment of Chronic Pulmonary Abscess. *Surgery* 15:783-788 (May) 1944.

Table 9
Postoperative Complications

Complication	No. Cases	Per Cent
Empyema, broncho-pleuro-cutaneous fistula	13	54.1
Bronchopleural fistula	5	20.8
Hemorrhage	3	12.5
Bronchopneumonia	1	4.2
Spreading pneumonitis	1	4.2
Dehiscence of wound	1	4.2
TOTAL	24	100

ondary hemorrhage are the most dreaded postoperative complications. Sweet^(10b) pointed out that the most frequent cause of death after a drainage operation is spreading infection in the lung.

Mortality

Eighteen of our 49 patients died, giving an overall mortality of 36.7 per cent. Neuhof⁽⁵⁾ recently reported the low mortality rate of 2.3 per cent in 172 cases of *acute* putrid lung abscess. Sweet's mortality rate in a series of 120 lung abscesses was 27.3 per cent^(10b). In a series of 2,115 cases of lung abscess collected from the literature, the mortality rate was 34.3 per cent⁽¹²⁾. Freedlander⁽¹³⁾ reported a mortality of 40.3 per cent in a series of 238 cases. Overholt and Rumel⁽¹⁴⁾ had a 6 per cent operative mortality in patients with acute lung abscess treated by external drainage. Their cure rate was 94 per cent. In 28 complicated lung abscesses treated by external drainage, they reported an operative mortality of 32 per cent and a cure rate of only 26 per cent. Crimm⁽⁶⁾ reported that the mortality in a series of cases receiving bronchoscopic and surgical drainage combined was 16 per cent.

In our series the mortality rate in the 35 patients who were operated upon was 34.3 per cent (table 7). Twenty-three of the patients (65.7 per cent) are now living. Five of the 12 operative deaths followed pneumonectomy, 2 being due to air emboli, 1 to abscesses in the remaining lung, 1 to bronchopleural fistula, and 1 to miliary spread of a tuberculous infection. Three deaths followed the removal of two lobes of the lung, and were caused by air embolus, hemorrhage, and bronchopleural fistula respectively. The mortality from unroofing procedures was 33.3 per cent; 2 of the 3 deaths in this group

were due to postoperative hemorrhage, and 1 was due to air embolus. Among the 7 patients on whom simple lobectomy was performed there was only 1 death, and this was due to bronchopneumonia.

In the 14 patients not operated upon, either because they were moribund and expired before operative intervention, or because they refused operation, the mortality rate was 42.9 per cent. Only 8 of the 14 patients are now living.

Results

Of the 31 living patients, 25 (80.6 per cent) have recovered. Four (12.9 per cent) are unimproved, having refused surgical intervention. Broncho-pleuro-cutaneous fistula is still present in 3 (9.7 per cent). It is believed that these patients will probably recover completely, either through spontaneous closure of the fistula or possibly with the aid of further surgery.

In our total series of 49 patients with lung abscesses the recovery rate is 51 per cent. Sweet^(10b) found that the total number of cures obtained in the patients treated from 1938 to 1942 was 59.2 per cent. Moore⁽¹⁵⁾ had an apparent cure rate of 55.1 per cent out of 78 patients operated upon; 12.8 per cent have broncho-pleuro-cutaneous fistulas and 6.4 per cent have healed wounds but are still troubled with persistent cough and sputum.

Summary and Conclusion

Forty-nine cases of lung abscesses have been reviewed. In 79.6 per cent the condition had reached the chronic stage before the patient was admitted.

The overall mortality rate in this series was 36.7 per cent, and the mortality rate in the cases operated upon was 34.3 per cent. Sixty-three and three tenths per cent (31 of 49 patients) are living, and 80.6 per cent of the living patients have recovered.

Recent reports in the medical and surgical literature^(10c,16) on the use of penicillin by aerosol insufflation, together with intrapleural and intramuscular injections, offer great hope for improvement in the medical treatment of acute lung abscesses *before* pul-

12. Allen, C. I. and Blackman, J. F.: Treatment of Lung Abscess. *J. Thoracic Surg.* 6:156-172 (Dec.) 1936.
13. Freedlander, S. O.: Total Pneumonectomy. *Ohio State M. J.* 33:769-776 (July) 1937.
14. Overholt, R. H. and Rumel, W. R.: Factors in the Reduction of Mortality from Pulmonary Abscess. *New England J. Med.* 221:441-534 (March 13) 1941.

15. Moore, R. L.: Pulmonary Abscess—A Surgical Problem. *Ann. Surg.* 116:373-386 (Sept.) 1942.
16. (a) Valle, A. R. and White, M. L., Jr.: Penicillin in Pulmonary Resection. *J. Thoracic Surg.* 14:437-444 (Dec.) 1943; (b) Smyth, C. J. and Billingslea, T. H.: The Treatment of Lung Abscesses with Penicillin: Report of 4 Cases. *J.A.M.A.* 129:1005-1010 (Dec. 8) 1943.

monary destruction and mixed infection have occurred. In patients requiring surgery for lung abscess, the use of the antibiotics and chemotherapeutic agents now available may help to reduce the morbidity and increase the recovery rate, although little on this subject has appeared in the literature.

Discussion

Dr. Josiah C. Trent (Durham): Dr. Hightower is to be commended for his excellent analysis of the cases of lung abscess treated at the Baptist Hospital. To get some idea of our recent results I have briefly reviewed the 34 cases of lung abscess treated on the thoracic surgical service of Duke Hospital during the year 1946.

All of these cases could be called chronic. Approximately a third were located in the right upper lobe, the left lower lobe being the next most common point of localization. In approximately two thirds of the 34 cases the cause was undetermined. Two cases followed pneumonia, 3 were postoperative, 2 were due to carcinoma, 1 to a cyst, 1 to a foreign body, and 1 to blastomycosis infection.

In 13 of these cases operation was refused or was considered inadvisable. Nine were drained, 9 had lobectomies, and 3 had pneumonectomies. Of those patients who had no operation, 1 died, 7 were discharged unimproved, and 5 improved or well. Of those patients who had drainage, 1 died, and 3 were discharged improved. All the patients who had resections were improved or well when discharged. One patient died of an unknown cause four months after right upper lobe lobectomy. There was one case of postoperative empyema following a pneumonectomy. Most of the patients were treated with penicillin or sulfonamides, or both, and with postural and bronchoscopic drainage.

Chronic lung abscess is a very discouraging disease. However, our entire concept of the treatment of this condition has been radically changed by two factors: (1) penicillin, and (2) refinement of operative technique which permits pulmonary resection with a minimum of risk. The present trend is toward more radical surgery in those cases which do not respond to non-operative therapy, since the danger of acute pneumonic spread and postoperative empyema is minimized by the use of penicillin. Resection offers a chance of cure to many patients who heretofore were condemned to wear a drainage tube with all of its attending miseries, and who were offered little hope of a complete cure.

Knowledge and wisdom—Although there has been a great extension of knowledge in recent years, there has been no accompanying increase in man's powers of reasoning. In fact the reverse seems to have been the case. The physician's mind is so much occupied in the attempt to accumulate more and still more recent knowledge, much of it ill-defined, that his powers of logical reasoning and his sense of perspective are endangered and he is apt to place undue significance and reliance on a specialist or laboratory report, to regard them as being above criticism, and to fail to give due weight to a well-taken history and a careful bedside examination. Knowledge comes, but wisdom lingers, and in no field of human endeavor is this more true than in medicine.—Leslie Hurley: *The General Practitioner and the Specialist*, M. J. Australia 1:67 (Jan. 17) 1948.

THE MODERN CONCEPTION OF LIVER DISEASES

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RALEIGH

Twenty-five years ago a diagnosis of liver disease or liver dysfunction was frequently made by the family physician; "biliousness" was the word most often used. During my early years of medical practice, terms such as "stimulating the liver," "toning the liver up," and "making the liver act" were much in vogue. The favorite drug for correcting liver abnormalities was calomel in large doses. If one dose did not help, a second dose was immediately given. In those days calomel was given to more patients than sulfadiazine is today—and in my neck of the woods that is saying a lot.

Observing my fellow practitioners giving calomel and getting results, I judged it to be essential that the young doctor follow suit. As a matter of necessity, I became a calomel prescriber. The patient was made quite sick by the large dose of this drug, and of course felt much better when the toxic effects were past. Many patients had to stay at home a day or so while taking the drug, because of the associated disability. Of course, when he saw the green, bile-colored stools, the patient knew that the liver had begun to act and felt that recovery was really on its way. The psychic effect of these stools was marvelous. The people in my community had been taught that they lived in a calomel belt, and as a matter of routine most of them took calomel twice a year to stimulate the liver function. As a liver-toner with calomel I was almost a complete flop, and for a while it appeared that this young doctor would lose caste with both patients and fellow practitioners because of his lack of skill in this art.

During the past ten years the liver dysfunctions have taken their place in the realm of metabolic diseases. The older methods of treatment are being abandoned, and new measures are being adopted which are quite different from those previously in use. We are now having a moderate degree of success in the treatment of diseases of the liver, whereas formerly attempts to treat the more

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serious forms of liver dysfunction were considered useless. No definite rules can be put down for the diagnosis and treatment of diseases of this organ, but we can approach the syndrome of liver insufficiency with some degree of hopefulness.

Acute Hepatitis

Chronic liver diseases usually follow acute conditions of the liver. It would seem wise, therefore, to consider the acute processes first. Acute hepatitis arises from damage to this organ by bacterial, chemical, protozoal, or viral agents. The most important, and most prevalent, form of hepatitis is that due to a transmissible filtrable virus. This type is most commonly classified as an infectious hepatitis, and includes the old catarrhal jaundice and many other forms of liver necrosis in which jaundice occurs.

Infectious hepatitis is no new disease. The causal agent has been shown to be present in the blood, nasopharynx, and feces of patients suffering from this disease. It can be spread by infected water and food. The possibility that flies may carry the virus from feces to food must be considered.

The usual incubation period is twenty to forty days, and the onset may be similar to that of many other acute infections. If the disease is sudden in its onset, chills, fever, headache, and aching in the joints and muscles are usually present. The fever is seldom high, and usually disappears after a few days. Blood studies show leukopenia, with relative lymphocytosis; usually no anemia is present, unless the disease is associated with previous liver injury. In about a third of the cases the onset is insidious, and is frequently marked by gastro-intestinal symptoms, including anorexia, nausea, vomiting and diarrhea. Often the patient will complain of abdominal pain, and physical examination will show an enlarged tender liver. If a careful history is taken, the passage of dark-colored urine will often be reported; this color is the result of bile pigments present in the urine. Except in the severe or fatal cases, the patient is usually sickest during the pre-icteric stage.

When the stage of jaundice is reached, all active symptoms may subside, leaving the patient much more comfortable than during the prodromal period. Jaundice usually occurs on the fourth or fifth day after the

onset of symptoms, but may be visible the first day, and occasionally comes quite late. It usually persists for two to three weeks, but occasionally lasts months. Itching of the skin is often associated with the jaundice.

Approximately 85 per cent of the patients with viral hepatitis have a spontaneous recovery in forty to fifty days. The disease is usually benign and quite often self-limited. Lucke and Mallory have recently reported a rather large number of cases of epidemic hepatitis which have ended fatally within ten days. Generally speaking, however, the mortality rate is very low.

Diagnosis

The disease is frequently misdiagnosed as influenza, upper respiratory infection, infectious mononucleosis, atypical pneumonia, or obscure fever. Sometimes the erroneous diagnosis is persisted in even after the jaundice has taken place. Differentiation from biliary or hepatic obstruction is very important. Malignant diseases, intercurrent hepatitis associated with cirrhosis, and occasionally hepatitis associated with stones in the gallbladder or ducts are the most important diseases producing such obstruction. The jaundiced patient with acute hepatitis is a poor surgical risk, and if the diagnosis is not positive a reasonable delay should be allowed before operation is attempted. Duodenal drainage, especially if it is combined with urine and stool examinations, may be helpful in diagnosing intrahepatic and obstructive jaundice.

The diagnosis of infectious hepatitis can frequently be made in the pre-icteric stage of the disease. In cases where clinical icterus is not present, one may suspect hepatitis from the history and from the finding of a large, tender liver on physical examination. In certain cases liver function tests are very helpful in diagnosis. The tests which are most reliable are the bromsulfalein retention test, determination of plasma bilirubin, the thymol turbidity test, and the cephalin-cholesterol flocculation test. The Harrison spot test for bilirubin in the urine may be most valuable at times. In applying these tests, one must remember that 80 per cent of the liver may be destroyed without impairment of its function. The liver's capacity for regeneration is astounding, and a large quantitative loss of the hepatic parenchyma may be replaced in a short period of time.

Many physicians believe that the non-icteric form of hepatitis occurs more frequently than the icteric form, and often goes undiagnosed. It is suspected that this form of hepatitis may be the forerunner of subsequent chronic liver insufficiencies and hepatic cirrhosis. The liver function tests usually show more abnormality in the early stages of the disease.

Jaundice has been recognized with increasing frequency following transfusions of plasma, whole blood, and serum. This type of infectious hepatitis usually occurs sixty to one hundred days after the injection. Danger of producing this type of hepatitis is always present when patients are given blood, plasma, or serum. No person who has been jaundiced in the past twelve months should be used as a donor. Stokes of Philadelphia has presented information that would make us believe that 10 cc. of gamma globulin given intramuscularly may prevent acute hepatitis.

Treatment

There is no specific treatment for acute hepatitis. In the active stage of the disease gamma globulin given intramuscularly is without effect. Bed rest and diet are the two most important factors in treatment. Delay in instituting bed rest will lengthen the course of the disease, and if the patient overexerts too soon, he may have a relapse. A diet high in carbohydrates and protein, and reasonably high in fat should be given. The usual requirement is 300 Gm. of carbohydrates, 125 of proteins, and at least 100 of fat daily. Recently Hoagland has given patients with infectious hepatitis a high-fat diet, and believes that it may be helpful rather than harmful, as was originally reported. The fat should usually be limited to butter, milk, eggs, and that present in boiled or baked meat.

Patients with hepatitis often have severe anorexia and nausea. In these cases it is difficult to maintain a proper nitrogen balance, especially in the early stages of the disease. At times glucose and protein hydrolysates may be given intravenously with excellent results. If parenteral feedings are indicated, vitamin supplements should be added. In patients with severe vomiting, plasma and whole blood are helpful.

Intramuscular injections of vitamin K are indicated if the prothrombin time of the

blood is delayed. Sulfadiazine and streptomycin should not be used unless urgently needed to combat a complicating bacterial infection. Penicillin in large doses every two hours may occasionally be life saving if the hepatitis is bacterial in origin.

Patients with liver disease tolerate barbiturates and opiates poorly. Alcohol is absolutely contraindicated, as it is in all forms of liver insufficiency. Most authorities believe that it should not be used for at least six months after the patient has made a complete recovery.

A few patients are very slow in recovering from viral hepatitis, and have a prolonged convalescence. Successful management of these patients requires skill and ingenuity. Frequently they do not appear ill, but complain of weakness, fatigue, and general malaise. They may be classed as neurotic, unless their condition is properly evaluated. The capacity of the patient to accomplish physical exercise is the best measure of convalescence. Middleton has called attention to the importance of graded exercise. Exercise tolerance tests may be helpful when graduated properly after infectious hepatitis. No patient should be classed as cured until he can take real exercise—that is, walk long distances without adverse symptoms.

Chronic Hepatic Insufficiency

In a small number of cases, acute hepatitis may develop into chronic liver disease. Early recognition and proper treatment of the acute condition will prevent this development in a large percentage of the cases. In chronic hepatitis, jaundice may come and go. This type of jaundice is frequently seen in heavy drinkers with hepatic insufficiency, which may progress over a period of months or years to the stage of real cirrhosis. On the other hand, symptoms may abate in the late stage of chronic hepatitis so that they no longer interfere with the patient's activity.

Frequently hyperbilirubinemia and marked hypoproteinemia may be present in chronic liver disease, and may be accompanied by ascites and edema. The findings in cirrhosis resulting from chronic hepatitis are not unlike those in cirrhosis arising from other causes. For all practical purposes Laennec's cirrhosis and chronic liver

insufficiency may be discussed together. The most important factor in the treatment of these diseases is their prevention whenever possible. Anorexia, loss of weight, anemia, dye retention in the liver, and reversal of the albumin-globulin ratio are signs of chronic liver disease which appear long before real cirrhosis with edema and ascites develops.

Etiologic factors

Snell and others have called attention to the fact that the nutritional disturbances associated with heavy drinking, rather than the toxic effect of alcohol on the liver, may be the cause of cirrhosis. Cirrhosis has been found in people who use no alcohol, but whose dietary intake is markedly deficient in proteins and vitamins. Among heavy drinkers real cirrhosis of the liver occurs less frequently in those who eat an adequate diet.

Treatment

Patients with chronic liver disease should be given the same diet used in acute infectious hepatitis. It is frequently difficult to maintain an adequate caloric intake in these patients, because of gastrointestinal complaints and anorexia. Concentrated and frequent feedings may be helpful. If they cannot be taken, intravenous injections of glucose and protein hydrolysates should be employed when all other efforts to provide an adequate caloric intake fail.

In order to obtain results with crude liver extract, it is believed that larger doses are required than can be given intramuscularly. A recent issue of the *Journal of the American Medical Association* carries a report on the use of liver extract intravenously in cirrhosis of the liver⁽¹⁾. Apparently excellent results have been obtained in some cases by this method. The authors report an increase in the patient's appetite and sense of well-being, along with disappearance of ascites in some cases.

We have had very little experience with the intravenous use of liver extract in treating cirrhosis of the liver. Intraheptol⁽²⁾ is a preparation that we have used a few times. Careful tests for sensitivity must be carried out before administration of the full intra-

venous dose is attempted. A small dose is first given intramuscularly. If no reaction occurs, 1/20 cc. of the liver extract diluted with 1 cc. of normal salt solution may be given slowly by vein. This injection should take at least three to five minutes. After thirty minutes, if no untoward effects are noted, 1 cc. of the liver extract diluted with 9 cc. of normal salt solution may be given very slowly by vein. If no reaction occurs, 2 cc. may be given the following day, with 8 cc. of saline solution. The dose is gradually increased until 10 cc. of crude liver is given with 40 cc. of normal saline solution. Each injection should require at least five to eight minutes. It is recommended that 10 cc. be given intravenously three times a week for several months.

We now know that many of the symptoms of chronic liver disease arise from the fact that the organ cannot properly metabolize protein. Quantitative and qualitative changes in plasma protein frequently occur, and may cause ascites and edema. In such cases intravenous use of human albumin may produce remarkable clinical improvement. Edema may be relieved in a few days, and even ascites may decrease. Fifty to 100 Gm. may be given at weekly intervals until a satisfactory plasma level of albumin is obtained. The patient should be kept in positive nitrogen balance. We have had no experience with the use of homologous albumin. It is recommended that when albumin is not available 500 to 750 cc. of plasma be given two or three times a week. Certainly, plasma has been helpful in many cases. Methionine and choline may be of some benefit in chronic liver disease. We have had no experience with these substances, but it would seem from the evidence at hand that in patients who can take an adequate diet little benefit can be expected from their use.

Chronic liver disease takes on eventually the characteristics of multiple vitamin deficiency. The damaged liver is unable to carry on adequately the metabolism of numerous constituents essential for maintenance of the body economy. Any measure helpful in overcoming the metabolic defect should be included in the therapy. When the measures outlined above are used early enough, they may be effective in at least checking liver disease, and occasionally the pathologic processes are reversed.

1. Labby, D. H., Shank, R. E., Kunkel, H. G., and Hoagland, C. L.: Intravenous Therapy of Cirrhosis of the Liver, J.A.M.A. 133:1181-1190 (April 19) 1947.
2. Put out by Lederle Laboratories.

Conclusion

In the diagnosis and treatment of liver disease, experience, common sense, and good judgment are essential for the best results.

Discussion

Dr. George T. Harrell (Winston-Salem): At the Bowman Gray School of Medicine we have actually made determinations of the vitamin levels in cirrhosis. Cayer in our clinic, studying the results of therapy in cirrhosis of the liver, has found that the large doses of some vitamins commonly used may actually be harmful (Arch. Int. Med. 80:644-654 (Nov.) 1947). He has shown by a study of the urinary excretion of F_2 , a fluorescent substance, that the damaged liver cannot utilize and break down niacinamide. We now prefer to use a daily vitamin supplement containing 10 to 15 mg. of niacinamide rather than the usually recommended dose of 100 to 150 mg.

It has been our impression that a high-protein, high-vitamin diet, supplemented with sulfur-containing amino acids, not only has a lipotropic action but definitely aids in the regeneration of liver cells. We believe that a full and adequate diet is equally as effective as the oral or intravenous administration of amino acids. If the patient is unable to eat the diet, we have forced feedings through an indwelling duodenal tube. Dramatic responses have been obtained by such techniques in patients who were comatose and appeared to be hopelessly ill. In one instance the liver shrank so rapidly from day to day that we were afraid we had induced acute necrosis; the subsequent complete recovery of the patient, however, indicated that the reduction in size was due to the mobilization of fat at an extremely rapid rate.

Lipotropic substances have been found to be of little value in the therapy of acute virus hepatitis.

Cancer mimicking ulcer . . . is seen by every surgeon several times a year. It is necessary to remind ourselves that cancer of the stomach, while it is usually a very rapid disease, may be as slow as a scirrhus tumour of the breast, going on for ten years with little change; that patients with slowly progressing cancers may have a good appetite and free hydrochloric acid, and that they may lose their symptoms for a time and put on weight on a gastric diet. These slow cancers are digested in their central necrotic parts by the gastric juices, and, whether at operation or necropsy, may have very much the appearance of an indurated peptic ulcer. But in these cases, if we go into the history carefully, we find that the gastric symptoms have started suspiciously late in life, that though they may have gone for some years they have been steadily and slowly progressive, and that the remissions have not been periods of complete health but of lessened discomfort. The true ulcer usually starts in the twenties, and, in its long history before its final cure by medicine or surgery, has many remissions of months' or years' duration. I know that prolonged irritations and the presence of scar tissue may give rise to a cancer, but in a lifetime I have seen little evidence that they do so except in squamous epithelium.—Ogilvie, H.: The Early Diagnosis of Cancer of the Oesophagus and Stomach, British M. J. 2:407 (Sept. 13) 1947.

One in every 25 World War II veterans training under the G.I. Bill is preparing for a career in medicine or in a related field, a Veterans Administration survey revealed.

CHRONIC GLOMERULONEPHRITIS WITHOUT HYPERTENSION, CARDIAC ENLARGEMENT, OR RETINAL CHANGES

Case Report with Autopsy Findings

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and

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Uremia is a syndrome resulting from renal insufficiency and accompanied by retention of urinary constituents. It is characterized by signs and symptoms related to the circulatory, gastrointestinal, respiratory, dermatologic, and nervous systems. Most varieties of renal disease which lead to uremia are associated with hypertension and hypertensive changes. Amyloid disease of the kidney and necrosis of the tubules due to mercury are exceptions, and even these conditions may produce hypertension in the late stages.

Probably the most common cause of uremia is chronic glomerulonephritis. The diagnosis of this condition, as a rule, presents no difficulty. In typical cases, the hypertension, cardiac enlargement, retinitis, albuminuria, and hematuria constitute an unequivocal picture. In patients with severe chronic glomerulonephritis, the blood pressure may drop because of cardiac weakness, but the presence of cardiac enlargement gives evidence of the antecedent hypertension. When the constant features are absent, however, the disease may be more difficult to diagnose.

Instances of adults dying in uremia due to chronic glomerulonephritis without hypertension or cardiac hypertrophy are rare. Fishberg⁽¹⁾ and Bertola^(2a) each observed a single case, and Bannick^(2b), Foster^(2c), and Weissberg and Ippolito^(2d) each reported 2 cases of chronic glomerulonephritis without

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1. Fishberg, A. M.: Hypertension and Nephritis, ed. 4. Philadelphia, Lea & Febiger, 1939, p. 170.
2. (a) Bertola A.: Contributo allo studio delle nefriti croniche iperazotemiche anibertoniche. Gazz. d. osp. 60: 967-974 (Oct. 22) 1939; (b) Bannick, E. G.: Severe Chronic Glomerular Nephritis without Hypertension, Cardiac Hypertrophy or Retinal Changes: Report of Two Cases. Arch. Int. Med. 39:741-747 (May) 1927; (c) Foster, N. B.: The Relations of Hypertension to Cardiorenal Diseases. Am. J. M. Sc. 161:808-819 (Dec.) 1922; (d) Weissberg, J. and Ippolito, T.: Diffuse Glomerulonephritis without Hypertension. Bull. New York M. Coll., Flower & Fifth Ave. Hosps. : 12-21 (June) 1940.

hypertension or cardiac enlargement. Several other reports of similar cases have appeared in the literature, but many were not confirmed by postmortem observations.

It is felt that the rarity of apparently uncomplicated renal failure due to chronic glomerulonephritis justifies report of the following case.

Case Report

A white automobile mechanic, aged 48, entered the North Carolina Baptist Hospital on January 15, 1947, complaining of headaches, weakness, anemia, and a generalized eruption. He also had numbness in the lower extremities, anorexia, a mild postnasal drip, and occasional nocturia. He had been in good health until a year before admission, when he began having moderate weakness and slight dyspnea. Six months prior to admission he acquired a rash which involved the entire body except the face. The lesions were described as being papular, erythematous, and pruritic. A month later he was told that he was anemic, and was treated with intramuscular liver extract and iron. Three months of this therapy produced no improvement. Two and a half months prior to admission his hemoglobin was 50 per cent.

Two weeks before he was seen in this hospital, examination at another clinic revealed a generalized maculopapular rash which did not involve the face, a peculiar yellow, bronzed discoloration of the skin, and a left inguinal hernia. A blood count at that time showed 6.2 Gm. (40 per cent) of hemoglobin and 1,830,000 red blood cells. The red cells showed slight anisocytosis, poikilocytosis, and basophilic stippling; an occasional macrocyte was seen. The reticulocyte count was 10 per cent. Gastric analysis showed no free hydrochloric acid after histamine.

The patient stated that he had consumed an average of one quart of liquor a week for many years, but none for the past seven years. He had had occasional episodes of epistaxis for several years, but since the present illness began nosebleeds had been frequent and at times severe. He had occasional colicky pain, nausea, and vomiting. His appetite had been poor for the past two months, and he had lost 30 pounds during this time.

Physical examination showed the temperature to be 98.6 F., pulse 116, respiration 22, blood pressure 138 systolic, 84 diastolic. The patient was a well developed, well nourished, white man with pallor and slight dyspnea. There was a maculopapular eruption over the arms, legs, and body, with excoriation, crusting, and bleeding scratch marks. The pupils and the optic fundi were normal. Clotted blood was present in the left nostril. The lungs were clear throughout and the heart was not enlarged. The rhythm was regular and no murmurs were heard. The liver was palpable three fingers' breadth below the right costal margin. A reducible left inguinal hernia was present. There was no edema of the extremities and neurologic examination was essentially normal.

Urinalysis showed a specific gravity of 1.008, and a 1-plus reaction for albumin; on microscopic examination occasional red and white blood cells were seen per high power field. The hemoglobin was 7.3 Gm., red blood cells 2,150,000, reticulocytes 1.8 per cent. The urine contained no Bence-Jones protein and the Sulkowicz test was negative. The total serum proteins were 6.3 Gm. per 100 cc., with 4.3 Gm. of albumin and 2.0 Gm. of globulin. Serologic tests for syphilis were negative. Examination of

the stool was negative for occult blood. A gastric analysis (fasting specimen) showed 24 clinical units of free hydrochloric acid and 50 of combined acid. Examination of the bone marrow showed depression of the erythroblastic series. Fluoroscopy of the chest, an x-ray of the skull, and an abdominal series were negative.

The patient's course in the hospital was rapidly downhill. On January 17 a furuncle appeared on the left thigh. The temperature ranged from 98 to 101 F.; the blood pressure remained at 140 systolic, 80 diastolic. Increasing dyspnea and signs of marked acidosis developed. The nonprotein nitrogen was found to be 164 mg. per 100 cc. of blood, and the carbon dioxide combining power 5 volumes per cent. The dyspnea was relieved by sixth molar lactate given intravenously. Repeated phenolsulfonphthalein tests showed no excretion of dye. The blood nonprotein nitrogen increased to 250 mg. per 100 cc. On January 22, generalized tetany developed, and the patient became cyanotic. Calcium gluconate and aminophyllin produced immediate improvement. The blood pressure was 210 systolic, 110 diastolic following tetany, but afterwards fell again to normal. On January 22 respirations became deep and irregular, with frequent apnea. The heart sounds became faint, and the patient expired.

Autopsy findings

The anatomic diagnoses were: (1) generalized excoriation of the skin, (2) abscesses of the left hip, (3) generalized arteriosclerosis, (4) hemangioma of the liver, (5) mitral valvulitis, healed, and (6) chronic glomerulonephritis.

The kidneys were equal in size, and together weighed 145 Gm. They were pale red, and the surfaces showed many small cysts and petechiae. The capsules were easily stripped, leaving a coarsely granular surface. A cross section showed bilateral cysts. The diameter of the renal cortices measured 4 mm. on the right and 3 mm. on the left; the diameter of the pyramids was 10 mm. on the right and 8 mm. on the left. The pelves and ureters were normal.

Microscopic examination showed decrease in the number of glomeruli and marked variation in their size. Many were hyalinized and completely fibrosed, while those remaining showed epithelial hyperplasia and many healed crescents. The tubules were decreased in number, and many were distended. There were many cystic spaces of varying size, lined by a single layer of flattened epithelium. Infiltration of the interstitial tissues by small round cells was noted. The arteries showed internal thickening, with vacuolation and hyalinization of the media. No arteriolar changes were noted.

The heart weighed 375 Gm. The left ventricular wall measured 1.5 cm. in diameter. A few nodular thickenings about 2 mm. in diameter were seen along the valve edges. There was no stenosis or thickening of the valve margins.

The liver was slightly enlarged and showed moderate central necrosis.

Differential Diagnosis

The absence of hypertension, retinitis, physical signs of cardiac enlargement, and significant urinary findings or a history of previous urinary complaints in this patient obscured the true diagnosis. Carcinoma of the stomach was suggested because of the weakness, anemia, weight loss, nausea, and vomiting. Other writers⁽²⁾ have found gas-

trointestinal malignancy to be the principal problem in the differential diagnosis of these atypical cases of glomerulonephritis. Other diagnoses considered in this case included Addison's disease, the primary anemias, multiple myeloma, and aplastic anemia.

Possible Explanations for the Absence of Hypertension

The modern concepts of renal hypertension hold that the ischemic kidney liberates a proteolytic enzyme, *renin*, which acts on a pseudoglobulin, *hypertensinogen* or *angiotonin precursor*, to split off a pressor substance, *hypertensin* or *angiotonin*, which is probably a polypeptide. Hypertensin is destroyed both *in vivo* and *in vitro* by the action of an inhibitor, *hypertensinase* or *angiotonase*, present in the blood and in various organs. There is evidence that renin itself is antigenic and may cause formation of *antirenin*. The following possibilities might permit the development of renal excretory failure without the production of hypertension.

1. *The absence of renin*

Renin is derived from the kidney cortex. It is apparently produced or stored by the proximal convoluted tubules. Kidneys in which the proximal tubules are poisoned by tartrate do not contain renin⁽³⁾. It has been recognized for several years that renal ischemia in animals increases the liberation of renin. Recently, Dexter and his associates⁽⁴⁾ have shown that in human beings, as in animals, constriction of the renal artery stimulates the renal humoral mechanism. The conditions essential to the production of renin are not known. There is no good evidence that anoxemia, histotoxic anoxia, or reduced pulse pressure is responsible.

According to Bell⁽⁵⁾, experimental hypertension of the Goldblatt type in dogs disappears after the kidney becomes markedly atrophic. Apparently kidneys that have undergone marked atrophy may cease to produce a pressor substance.

2. *The absence of hypertensinogen*

Renin tachyphylaxis, according to Page and his associates⁽⁶⁾, may be attributed to the exhaustion of hypertensinogen. This finding seems to indicate that the reserve supply of hypertensinogen is limited. The liver is the chief source of hypertensinogen; in normal and hypertensive dogs removal of the liver, or hepatic damage, reduces the hypertensinogen content of plasma, and hence the pressor response to injected renin⁽⁷⁾.

Haynes and Dexter⁽⁸⁾ studied the hypertensinogen levels in patients with liver damage, and showed that 6 of 10 patients had lowered values. The most marked decrease was seen in cases of advanced cirrhosis with severe hepatic insufficiency.

3. *The destruction or inactivation of hypertensin by hypertensinase or other proteolytic ferments*

Hypertensin is destroyed by hypertensinase, an albumin fraction found in the blood and in various organs, especially the kidneys⁽⁹⁾. *In vitro* studies have shown that hypertensin is also destroyed or inactivated by trypsin, pepsin, carboxypeptidase, aminopeptidase, extracts of liver and spleen, and fresh normal blood serum⁽¹⁰⁾.

4. *The absence of essential endocrine factors*

In adrenalectomized animals the hypertensinogen levels are lowered and the sensitivity to hypertensin is apparently decreased, while the serum content of hypertensinase is unaltered. Removal of the hypophysis dampens but does not abolish the effects of constriction of the renal arteries⁽¹¹⁾. The thyroid, parathyroids, and pineal glands play no significant role in renal hypertension.

Page⁽¹²⁾ has shown that only cortin is necessary to maintain hypertension in dogs

3. Best, C. H. and Taylor, N. B.: *Physiological Basis of Medical Practice*, ed. 4, Baltimore, The Williams and Wilkins Company, 1945, p. 132.
4. Quinby, W. C., Dexter, L., Sandmeyer, J. A., and Haynes, F. W.: Renal Humoral Pressor Mechanism in Man: Effect of Transitory Complete Constriction of the Human Renal Artery on Blood Pressure and on Concentration of Renin, Hypertensinogen and Hypertensinase of Renal Arterial and Venous Blood, with Animal Observations, *J. Clin. Invest.* 24:69-74 (Jan.) 1945.
5. Bell, E. T.: *Renal Diseases*, Philadelphia, Lea & Febiger, 1946, p. 310.

6. Page, I. H., and others: Reduction of Arterial Blood Pressure of Hypertensive Patients and Animals with Extracts of Kidneys, *J. Exper. Med.* 73:7-41 (Jan.) 1941.
7. Page, I. H., McSwain, B., Knapp, G. M., and Andrus, W. De W.: The Origin of Renin-Activator, *Am. J. Physiol.* 135:214-222 (Dec.) 1941.
8. Haynes, F. W. and Dexter, L.: The Renal Humoral Pressor Mechanism in Man; Hypertensinogen Content of Plasma of Normal Patients and Patients with Various Diseases, *J. Clin. Invest.* 24:78-81 (Jan.) 1945.
9. Braun-Menendez, E., Fasciolo, J. C., Leloir, L. F., and Munoz, J. M.: The Substance Causing Renal Hypertension, *J. Physiol.* 98:283-298 (July 24) 1940.
10. Croxatto, R. and Croxatto, H.: Comparative Study of Hypertensinase and Proteinase Activity of Blood Plasma, *Proc. Soc. Exper. Biol. & Med.* 61:330-333 (April) 1946.
11. Page, I. H. and Sweet, J. E.: The Effect of Hypophysectomy on Arterial Blood Pressure of Dogs with Experimental Hypertension, *Am. J. Physiol.* 120:238-245 (Oct.) 1937.
12. Page, I. H.: The Effect of Bilateral Adrenalectomy on Arterial Blood Pressure of Dogs with Experimental Hypertension, *Am. J. Physiol.* 122:352-358 (May) 1938.

with both renal arteries constricted, and with the hypophysis, testes, and adrenals removed.

5. *Inactivation of pressor amines by aminases*

Bing and Zucker⁽¹³⁾ have demonstrated that the decarboxilation of 1-dihydroxy-phenylalanine by the ischemic kidney produces hydroxytyramine, a pressor substance. Certain amino acids, after decarboxilation without deamination, yield powerful pressor amines. The demonstration of Schroeder and Adams⁽¹⁴⁾ that tyrosinase (a phenolic oxidase) as well as aminoxidase, prepared from hog liver, lowers the blood pressure in dogs lends support to this possible mechanism of hypertension.

Morton and Tainter⁽¹⁵⁾, studying the effects of several sympathomimetic amines on perfused blood vessels, learned that certain of these amines failed to show activity except in the presence of adrenaline. It appears that these amines act by blocking the ferment which destroys the adrenaline constantly liberated by the blood at the myoneural junction. Such a ferment (the analogue of cholinesterase) has not yet been demonstrated, but is being generally assumed. Absence of adrenaline at the myoneural junction or increased activity of the ferment which destroys adrenaline would inactivate pressor amines formed in the ischemic kidney. Such a disorder, the physiologic analogue of myasthenia gravis, has not been described.

6. *Immunity to renin, hypertensin, or hypertensinogen*

Recent experiments⁽¹⁶⁾ have shown that renal lesions which closely simulate those of human glomerulonephritis can be produced by means of antikidney serums. It is difficult to prove that glomerulonephritis in human beings may be due to specific antibodies acting against renal tissue, since in all cases of experimental glomerulonephritis

the antibodies were developed in an animal species other than the one in which the renal lesion was produced. The evidence for auto-antibodies to kidney substance lies in the demonstration that injections of a mixture of kidney substance and streptococcus toxin caused animals to produce antibodies which would precipitate both kidney extract and streptococcus toxin. The production of these antibodies is most readily explained by the concept of haptens—the streptococcal toxin acting as a hapten to render the kidney extract antigenic. That a similar mechanism might lead to the formation of antirenin, antihypertensin, or antihypertensinogen seems possible.

Goldblatt and his associates⁽¹⁷⁾ have shown that when dogs are given small intramuscular injections of hog renin for three to five months a factor develops in the blood which prevents the pressor effect of large doses of hog renin given intravenously. The blood serum of such dogs is also capable of inactivating or destroying renin *in vitro*, so that a mixture of renin and antiserum does not produce a pressor response when injected into other dogs. Wakerlin⁽¹⁸⁾ has concluded that the antihypertensin effect produced by repeated injections of hog renin extract is due to some constituent other than renin. It is possible that some other type of immune response to renin is involved. The possibility of the production of auto-antibodies to renin deserves consideration in this case.

Application of Theories to the Present Case

That some component of the renin-hypertensive mechanism failed to be present, or to exert its usual action, in the case under discussion must be considered. The characteristic microscopic picture of chronic glomerulonephritis makes the existence of renal ischemia certain.

1. In view of our limited knowledge concerning the liberation of renin, it is difficult to presume its absence in this patient. One might speculate that the renin-producing cells—presumably the proximal convoluted tubules—suffered greater destruction, proportionately, than did those producing the antipressor substance (hypertensinase). The autopsy findings do not support this theory, however.

13. Bing, R. J. and Zucker, M. B.: Renal Hypertension Produced by Amino Acid, *J. Exper. Med.* 71:235-246 (Sept.) 1941.

14. (a) Schroeder, H. A. and Adams, M. H.: Effect of Tyrosinase on Experimental Hypertension, *J. Exper. Med.* 73: 531-550 (April) 1941; (b) Schroeder, H. A.: Effect of Preparation of Amino Oxidase on Experimental Hypertension, *Science* 95:306-307 (March 20) 1942.

15. Morton, M. C. and Tainter, M. L.: Effects of Sympathomimetic Amines on Perfused Blood Vessels, *J. Physiol.* 98:263-282 (July 24) 1940.

16. Cavelli, P. A. and Cavelli, E. S.: Studies on the Pathogenesis of Glomerulonephritis: Production of Autoantibodies to Kidney in Experimental Animals, *Arch. Path.* 39:143-152 (March) 1945.

17. Goldblatt, H., and others: The Nature and Properties of Antirenin, *J.A.M.A.* 122:135-136 (May 8) 1943.

18. Wakerlin, G. E., in discussion of Goldblatt (17).

2. Lack or inactivation of hypertensinogen is unlikely. The degree of liver damage found would not appear great enough to justify this explanation.

3. Proof that there was destruction or inactivation of hypertensin can not be given, and the work of Haynes and Dexter⁽⁸⁾ makes this possibility unlikely. In a study of patients with hypertension, azotemia, and Addison's or hepatic disease, they concluded that hypertensinase played no significant role in preventing the production of hypertension.

4. Addison's disease was considered clinically in the present case, but no evidence of adrenal destruction was found at necropsy.

5. We have no data to support the theory that inactivation of pressor amines was the mechanism which prevented the development of hypertension in this patient.

6. The formation of antirenin offers a possible explanation for the absence of hypertension in this case. Substantial evidence that auto-antibodies may develop to kidney extract has been presented. That some foreign substance such as a component of crude liver extract, which the patient received, or some bacterial toxin may have served to render the renin antigenic in this patient seems possible. Further studies on the antigenic properties of renin may be revealing.

Summary

A case of terminal uremia due to chronic glomerulonephritis, without clinical evidence of hypertension, cardiac enlargement or retinal changes, and with minimal urinary findings, is reported.

The problem of differential diagnosis and the mechanisms by which renal excretory failure may develop without the production of hypertension are discussed.

The man doing general practice is largely looked up to in his community as a leader. He should not try to shirk such responsibility. He should keep reasonably abreast of local and other politics. Of course it is not good for a doctor to get deeply involved in politics, but he should be able to give good advice at all times. He should keep abreast of all civic matters, particularly where medical questions are concerned. He should be prepared to address local organizations on current matters without being naive. He should make it his business to be acquainted with at least some of his city and county officials so that he can use his influence at the proper time.—E. A. Royston: The Section on General Practice: Its Problems, Its Goals, Its Responsibilities, California Med. 68:281 (April) 1948.

MUCOCELE OF VERMIFORM APPENDIX

With Report of Three Cases

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A true cyst of the appendix containing mucus is known as a mucocele. Actually, the encysted material is pseudomucin, which can be identified by Hammarsten's method as described by Lewis⁽¹⁾, after any protein or mucin has been precipitated and filtered.

Weaver⁽²⁾ credits Rokitsansky with having recognized the condition in 1842, but other authors state that Virchow first described it in 1863. Fraenkel in 1901 reported the first autopsy performed in a case of pseudomyxoma peritonei, in which a ruptured appendix was found containing the same gelatinous substance as the general peritoneal cavity.

Incidence

Dannreuther⁽³⁾ states that in a series of 8,457 appendectomies at the New York Post-Graduate Hospital, mucocele was found eight times—an incidence of 0.1 per cent. Seven of these cases were in women past middle life. Other authors vary in their reports as to incidence, the figures ranging between 0.3 per cent and 0.11 per cent. Grodinsky and Rubnitz⁽⁴⁾ quote Jones and Carmody as stating that, up to 1936, the total number of reported cases of mucocele of the appendix was approximately 400. The incidence of "pseudomyxoma peritonei" is much less, only 90 cases having been reported up to 1934⁽⁵⁾.

Etiology

Phemister⁽⁶⁾ attributed the cause of mucocele formation to normal appendiceal invo-

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1. Lewis, E. G.: Pseudomyxoma of the Peritoneum. Surg., Gynec. & Obst. 19:757-760, 1914.
2. Weaver, C. H.: Mucocele of Appendix with Pseudomucinous Degeneration, Am. J. Surg. 36:523-526 (May) 1937.
3. Dannreuther, W. T.: Mucocele of Vermiform Appendix. Am. J. Obst. & Gynec. 31:342-354 (Feb.) 1936.
4. Grodinsky, M. and Rubnitz, A. S.: Mucocele of Appendix and Pseudomyxoma Peritonei, Surg. Gynec. & Obst. 73:345-354 (Sept.) 1941.
5. D'Aunoy, R. and Fine, A.: Pseudomyxoma Peritonei of Appendiceal Origin, Am. J. Cancer 22:59-65 (Sept.) 1934.
6. Phemister, D. B.: Pseudomucinous Cyst of the Appendix. J.A.M.A. 64:1834-1836, 1915.

lution and associated inflammation. Milliken and Poindexter⁽⁷⁾ described the conditions which they believed to be essential to mucocele formation as follows:

(1) A slowly stenosing process must take place, as a rapid stenosis would lead to gangrene.

(2) The lumen must be sterile, as the presence of bacteria would lead to empyema.

(3) An actively secreting mucosa must be present, or secretion must be more rapid than absorption, and there must be a change in the mucosa, so that mucus is changed into pseudomucin.

Waugh and Findley⁽⁸⁾ distinguish between *hydrops* and *mucocoele*. In the former condition an accumulation of viscid fluid in the lumen of the appendix stretches the mucosa and leads to atrophy and a thinning of the muscular wall; the latter is characterized by retention of thick, viscid mucus, by a hyperplastic mucosa, and by thickened, fibrous, vascularized walls.

McCrae and Coplin⁽⁹⁾ offered the theory that mucocele formation is due to a localized area of obstruction near the appendiceal base, caused by inflammation and fibrosis. If the inflammation is extensive, the succeeding fibrosis will obliterate the lumen. Localized fibrosis, however, constricts the lumen and prevents drainage, so that the organ is gradually distended with mucus. The accumulated mucus is changed into a jelly-like material as a result of absorption.

Wells⁽¹⁰⁾ produced an appendiceal mucocele in a rabbit by placing a ligature at the root of the appendix, not including the appendicular vessels. Grodinsky and his co-workers⁽⁴⁾ produced mucocoeles in rabbits by the same technique. In the animals that developed mucocoeles, secondary intraperitoneal deposits were noted at future operations performed after an adequate time interval.

Diagnosis

Mucocele presents no definite symptom complex. One of our patients had a palpable mass in the right lower quadrant; the second patient had symptoms typical of acute ap-

pendicitis; and the third case was symptomless. Most of the articles on the subject mention pain as a symptom, but this pain is vague and is not apt to be localized. It may be felt in the epigastrium, para-umbilical region, or right lower quadrant. Fever, leukocytosis, nausea, and vomiting are usually not noted except in the acute superimposed attack. There may be tenderness with or without rigidity over the appendix. Vorhaus⁽¹¹⁾ reported a case diagnosed preoperatively by barium enema examination, and gave the following criteria to support such a diagnosis:

1. An irregular filling defect of the lower end of the cecum.

2. A large, irregularly filled appendix.

3. A large appendiceal shadow easily confused with the terminal ilium.

4. A cecal defect, showing a series of superimposed striations, as though the barium were filtering through different levels of semiviscid substance.

5. On partial evacuation, a feathered appearance of the lower cecum and appendix.

Usually the obstruction responsible for the mucocele does not allow filling of the appendix. Filling can occur only if the obstruction is incomplete or if the lumen has reopened.

Complications

Carcinoma has been known to develop in a mucocele, and it has been suggested that malignancy might be the obstructive factor producing a mucocele. Intestinal obstruction due to the pressure of the mucocele, or to intussusception, may develop.

The major complication of mucocele is rupture and general peritoneal contamination with the pseudomucinous material. Weaver⁽²⁾ states that, as the appendix distends, diverticula form. These may rupture and extrude material into the peritoneal cavity, or spillage may be due to rupture of the organ. The appendix may then collapse, the rupture may heal, and the whole process may repeat itself. The extruded material is not absorbed, but becomes encapsulated by the omentum, or by fibrous tissue produced by a local plastic peritonitis. In time, the abdomen becomes distended with gelatinous masses. It is hardly possible that the quantities of material which have been noted in the peritoneal cavity could be extruded

7. Milliken, G. and Poindexter, C. A.: Mucocele of Appendix with Globoid Body Formation. *Am. J. Path.* 1:397-402 (July) 1925.

8. Waugh, T. R. and Findley, D.: Mucocele with Peritoneal Transplantation in Adenocarcinoma of Appendix. *Am. J. Surg.* 37:518-525 (Sept.) 1937.

9. McCrae, T. and Coplin, W. M. L.: Gelatinoid Carcinoma (Morbus Gelatinosus) of the Peritoneum. *Am. J. M. Sc.* 131:175-191, 1916.

10. Wells, A. Q.: Experimental Lesions of Rabbit's Appendix. *Brit. J. Surg.* 24:766-772 (April) 1937.

11. Vorhaus, M. G.: Recognition of Some Less Common Diseases: Duodenal-Jejunal Diverticula; Mucocele of Appendix and Cecum. *J.A.M.A.* 94:165-169 (Jan. 15) 1930.

through small openings. It is more probable that the initial seedlings which are extruded proliferate to form a true intraperitoneal adenocystoma.

It is to be emphasized that "pseudomyxoma peritonei" is not an entity in itself. The same picture can be produced by a ruptured ovarian cystadenoma, or the condition may originate in mesenteric cysts, mucocèles, retroperitoneal cystadenomas, or intestinal diverticula. In one reported case⁽⁹⁾, it followed cancer of the gallbladder.

Pathology

There is considerable variation in the size of mucocèles. The shape—whether globular or sausage-like—seems to depend on the site of obstruction in relation to the appendiceal base⁽⁴⁾. Early, the walls of a mucocèle may show hypertrophy of the muscle fibers; later, the muscle fibers are absent or thinned, being replaced by connective tissue⁽⁴⁾. Milliken and Poindexter⁽⁷⁾ described the formation of intraluminal bodies about the size of small peas. It is believed that these bodies result from inspissated mucus material.

Microscopically, in cases of early mucocèle the mucosa may show little change; in older mucocèles, the mucosa cells are flattened or atrophic. The cellular lymphoid components, so abundant normally, are thinned. At first the seromuscular layer may be thickened by inflammation, but later this layer is thinned.

Weaver⁽²⁾ points out that there is still a question as to whether the cellular response in cases of pseudomyxoma peritonei is neoplastic or inflammatory. Phemister⁽⁶⁾ reports a case of ruptured mucocèle in which the disseminated intraperitoneal implants disappeared following appendectomy. Apparently removal of the appendix destroyed the source of the implants, and probably the remainder of the implants were absorbed. Experimentally Grodinsky and Rubnitz⁽⁴⁾ have shown that in some cases the intraperitoneal transplants disappear. These writers explain this occurrence on the basis of an immunity reaction. However, most authors state that the pseudomucinous lesions eventually become malignant.

Microscopic examination of the implants reveals an outer wall of connective tissue, which may at times be myxomatous. Centrally, there is a necrotic zone containing inflammatory cells, surrounded by a zone of

various other cells—eosinophils, giant cells, and large mononuclear cells.

Treatment

The treatment of mucocèle is appendectomy. If there has been no leakage, complete recovery is expected; if leakage has occurred and transplants are scattered throughout the peritoneum, it is impossible to remove all the material, and the prognosis is guarded. One has to hope that such a case will be one in which the transplants disappear following removal of the primary focus. Frequently, however, the secondary lesions become malignant. X-ray therapy has been recommended, but its value has not been definitely established.

Report of Cases

Recently we treated a patient with mucocèle of the appendix in whom a tumor mass was palpable in the right lower quadrant. A review of the records of Watts Hospital revealed another case in which acute inflammatory changes developed, leading to perforation and peritonitis. A third case was incidentally noted at laparotomy performed for another condition.

Case 1

A 59-year-old white woman was admitted to the hospital September 26, 1946, complaining of a lump in her right side. She had been previously studied and x-rayed in another clinic, where she was told that there was a "mass involving the ascending colon." For the past two years the patient had noted slight pain in the right lower quadrant, which was relieved by lying down. There was no history of nausea, vomiting, or weight loss, and she denied any change in bowel habits. Thirty years previously she had received sanatorium treatment for pulmonary tuberculosis, but follow-up x-rays since that time had been negative. One sister had died with cancer of the breast. The rest of the history was non-contributory.

Physical examination was essentially negative except for a firm, tender, elongated mass in the right lower quadrant, extending from a point midway between the umbilicus and the anterior superior iliac spine upward along the right flank. The mass measured 12½ by 5 cm. It was freely movable.

A complete blood count was within normal limits; urinalysis was negative, except for pyuria. Staphylococcus aureus was cultured from the right kidney. Cystoscopic examination added nothing save for the positive urine culture. The Wassermann and Kahn tests were negative. X-ray examination of the colon with barium revealed "a filling defect in the posterolateral aspect of the cecum." It was smooth in outline, and the appearance suggested an extrinsic tumor mass exerting pressure on the cecum.

The preoperative diagnosis was a cecal tumor or an inflammatory mass resulting from recurrent appendicitis. One observer made a diagnosis of mucocèle. After suitable preparation of the patient with



Fig. 1. Mucocoele of appendix.

a low-residue diet and Sulfathaladine, the abdomen was opened on October 1, 1946, through a right rectus incision under spinal anesthesia (14 mg. of Pontocaine). A large mucocoele of the appendix (fig. 1) was delivered and resected. It had not ruptured. The postoperative course was uneventful, and the wound healed cleanly.

The pathologist's report on the appendix was as follows: "Specimen consists of a 'J' shaped appendiceal mass measuring 14 by 3.5 cm. The external surface is smooth, grayish pink, and on palpation, the mass seems to be filled with fluid under pressure. On opening the lumen, thick mucus having the consistency of gelatin is found. The wall is quite thin and fibrous, measuring at one point 3 mm. There is no visible mucosa, the inner surface being smooth. Microscopically, there is complete loss of mucosa. The wall is made up of compressed smooth muscle. Occasional cords of epithelial cells are noted. Diagnosis: mucocoele of appendix."

The patient has been followed since her hospital discharge, and she has continued to do well.

Case 2

A 63-year-old white man was admitted to the hospital complaining of generalized abdominal pain of two days' duration. Tenderness and rigidity with rebound tenderness was noted in the right lower quadrant on physical examination. The temperature was 101 F., the pulse 120. The white blood cell count was 15,000, with 86 per cent neutrophils. Urinalysis was essentially negative, and serologic tests for syphilis were also negative.

A diagnosis of acute appendicitis, probably ruptured, was made. The patient was operated on through a McBurney incision, under spinal anesthesia. The appendix had ruptured and was surrounded by a fibrous mass, the size of a small orange. The appendix was removed.

The pathologist reported a "large cyst formation (12 by 7 by 5 cm.) of the end of the appendix. The lumen of the appendix communicated with the cavity of the cyst, and the appendiceal wall was confluent with the sac wall. The microscopic examination revealed acute, diffuse inflammation with supuration and a purulent exudate. The wall of the sac was composed of inflammatory tissue containing smooth muscle."

Sulfanilamide solution was given subcutaneously, and the patient was discharged fifteen days postoperatively, completely recovered. Recently he was operated on again for another abdominal condition; no trace of any intraperitoneal transplants was found.



Fig. 2. Mucocoele of appendix, perforated.

Case 3

A white woman 44 years of age was admitted to the hospital complaining of nervousness and a fullness in her neck, and also of excessive menstrual flow. Physical examination revealed a uterus which was enlarged, nodular, and boggy, and an enlarged, nodular thyroid, the right lobe being chiefly involved. Blood examination showed the hemoglobin to be 58 per cent and the red blood cell count 3,600,000. The urine was negative. Basal metabolism tests were -5 and -11 on two occasions. A chest x-ray and an electrocardiogram were negative. It was decided that a hysterectomy should be done first, because of the menorrhagia and anemia.

The operation was performed under pentothal, gas, oxygen, and ether anesthesia. The uterus was filled with small fibroids, and a mucocoele was found in the distal third of the appendix. The pathologic examination revealed leiomyomas of the uterus and a mucocoele of the appendix. The microscopic description of the appendix was as follows: "The proximal lumen of the appendix is completely obliterated by scar tissue. In the distal portion the lumen is distended with a mass of mucin. The mucous membrane has been completely destroyed."

Ten days after the abdominal operation subtotal thyroidectomy was done. The postoperative course was uneventful, and the patient was discharged improved on April 24, 1947.

Summary

1. The literature on the subject of appendiceal mucocoele is reviewed, and the etiology, pathology, complications, and treatment of this condition are discussed.

2. Three cases of mucocoele seen at Watts Hospital are presented.

3. In none of our cases was the major complication of this disease—peritoneal transplants of the pseudomucinous material

—found. From a review of the literature it would seem that some patients with this complication recover completely following appendectomy. However, in the majority of the cases of peritoneal contamination, it is believed that the pseudomucinous lesions eventually become malignant.

Maternal Welfare Section

REPORT OF PROGRESS OF THE MATERNAL WELFARE COMMITTEE

FRANK R. LOCK, M.D.

WINSTON-SALEM.

The Committee on Maternal Welfare was organized in December, 1945. The purpose of the committee is to encourage high standards of obstetric care. In a search for satisfactory methods to reach its objective, the Committee found that an intelligent approach to the problem could not be made until the exact causes of our maternal deaths were determined. A maternal mortality survey was begun on August 1, 1946. This study has been made by requesting, from the physician who signs the death certificate, details of the final illness of any patient whose death is related to pregnancy. Additional information is sought from other physicians who saw the patient during her pregnancy.

A fine spirit of cooperation has been demonstrated by the physicians of North Carolina. Three hundred and ninety-two certificates of death have been sent to the Maternal Welfare Committee by the Division of Vital Statistics of the North Carolina State Board of Health. With two exceptions, the Committee has been given information about the patient's fatal illness by the physician who attended her. In the early months of the study, the barest facts were often sent to the Committee for analysis. Recently, full and detailed records have been submitted in most instances. Minute records of the history, physical findings, and treatment used have

allowed an accurate classification and analysis of the deaths. The study of 320 cases has been completed by the Committee, and an analysis of the case record sent to the attending physician.

The studies are made in an effort to give constructive suggestions for the management of similar complications of pregnancy in the future. The Committee fully appreciates the advantage of hindsight, when the full record and result are known to them. They also maintain an idealistic point of view. Many deaths are classified as preventable, even though the members of the Committee fully understand that death was unavoidable under the existing circumstances. Such unavoidable, but theoretically preventable deaths are particularly apt to occur if serious complications develop when a patient is being delivered in a rural home. An increasing tendency to obtain hospital accommodation for patients presenting serious obstetric problems is evident from a review of the Maternal Welfare Committee's records.

The necessity for an educational campaign to reach the poorest and least intelligent people of North Carolina is evident. Forty per cent of the maternal deaths resulted directly from ignorance or neglect on the part of the patient or her family. In these cases, no attempt was made to obtain medical care early enough to save the patient's life, or the patient did not follow the advice when it was given. The Committee is now working toward such an educational program, with the hope of beginning within the year.

Causes of Death (Table 1)

Hemorrhage

Bleeding has now become the leading cause of maternal deaths in North Carolina. Loss of blood was the direct cause of death for 94 patients, and was a major contributing factor in 21 additional cases.

Postpartum hemorrhage was responsible for 55 of these 115 deaths. From the physician's point of view, two grave problems are present: (1) There is a tendency to underestimate or minimize the seriousness of postpartum bleeding. (2) In some cases, a blood loss which seemed moderate resulted in death because of a pre-existing anemia or other causes for lowered resistance. Bleeding often recurs a short time after an initial

Presented to the First General Session, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

Frank R. Lock, M.D.,	J. S. Hunt, M.D.
Chairman	T. L. Lee, M.D.
J. Street Brewer, M.D.	Ivan Procter, M.D.
G. M. Cooper, M.D.	R. A. Ross, M.D.
E. W. Franklin, M.D.	R. A. White, M.D.

Table 1

MATERNAL MORTALITY SURVEY,

August 1, 1946 - May 1, 1948

(392 maternal deaths reported)

CAUSES OF DEATH IN 320 CASES IN WHICH STUDIES HAVE BEEN COMPLETED*

Hemorrhage — 115 deaths

Hemorrhage was the direct cause of death in 94 cases
Hemorrhage was a contributing cause in 21 cases

Postpartum	55
Rupture of uterus	17
Ectopic pregnancy	14
Abortion	12
Other types	17

78 of these patients received no transfusion

Toxemia — 111 deaths

Convulsive	67
Non-convulsive	44

73 of these patients received poor prenatal care

Infections — 73 deaths

Postpartum	13
Postabortal	17
Intercurrent	21
Tuberculosis	8
Embolism	14

Anesthesia — 15 deaths

Spinal	7
General	8

Heart Disease — 17 deaths

Undetermined and Miscellaneous — 19 deaths

Late Obstetric Complications — 16 deaths

271 were preventable obstetric deaths

13 were non-preventable

36 were non-obstetric deaths

*More than one causative factor was present in several of the cases. These are listed under each of the causes which entered into the fatal outcome.

postpartum hemorrhage is controlled, and extraordinary precautions should always be taken to prevent this occurrence.

Rupture of the uterus with intra-abdominal hemorrhage was responsible for the death of 17 patients. The diagnosis of this condition is difficult, because little or no external bleeding may be present. Palpation and inspection of the lower uterine segment and cervix should be performed in every patient delivered by internal podalic version and extraction. The possibility of rupture of the uterus should be considered in every patient who has had a previous cesarean section or other procedure leading to a scar of the uterine wall.

Facilities to simplify the administration of whole blood by transfusion are urgently needed. A blood bank is an economically sound investment for a small hospital, and numerous such banks must be established to

reduce the alarming number of deaths from obstetric hemorrhage. Lack of these facilities accounts for the fact that 78 of the 115 patients who died from hemorrhage were not given whole-blood transfusions. Blood plasma and glucose are temporary measures and will not save the patient's life.

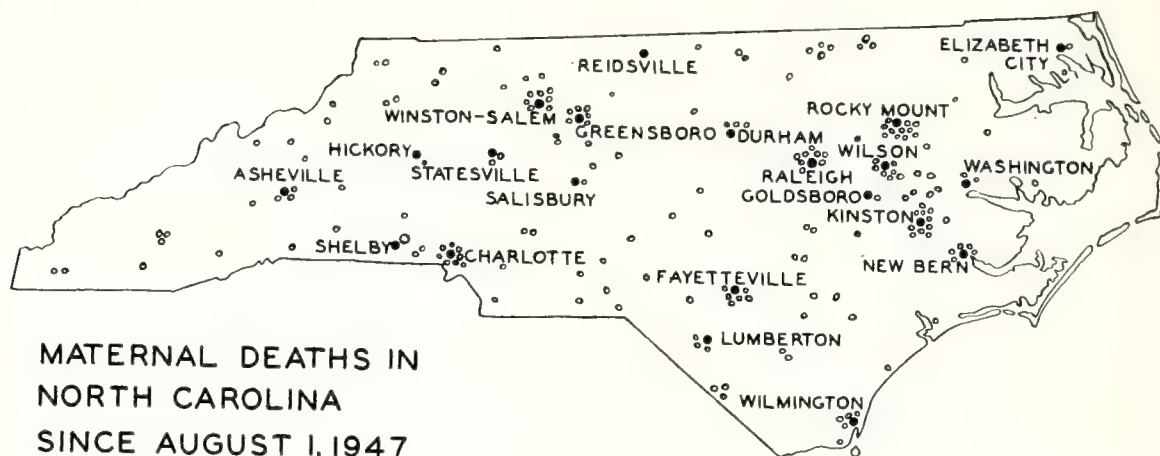
Toxemia

The hypertensive complications of pregnancy continue to be one of the leading causes of maternal deaths in this state. In considering the quality of prenatal care, the Committee noted that many patients failed to return for prenatal examinations according to instructions. In these instances poor prenatal care resulted from indifference upon the part of the patient and her family. Unfortunately, however, there is a tendency upon the part of physicians to consider hypertension during pregnancy in the same category as hypertension in ordinary medical patients. *Blood pressure levels of 140 systolic, 90 diastolic are an indication of beginning toxemia.* Any slight increase represents a potential hazard to the patient, and hospitalization is indicated for every patient with a blood pressure of 160 systolic, 100 diastolic, or above. Convulsions may occur in patients with blood pressures below this level. Non-convulsive toxemia leading to coma and a progressive downhill course is responsible for nearly as many maternal deaths as is eclampsia.

Infections

The great problem of puerperal infection has almost been conquered by aseptic obstetric technique, and by the use of chemotherapy and antibiotic agents when evidence of infection appears. Postabortal infections are common, however, and treatment may not be requested until the infection is well established. Most cases of embolism are associated with infections of varying severity; and, although an inescapable mortality from embolism is expected, some of the deaths may be avoided by better prophylaxis against infection resulting from abortion and delivery.

The 21 deaths from intercurrent infection have resulted from attempts to treat pneumonia and other serious diseases in the home. Hospitalization is necessary when pneumonia is associated with pregnancy, since its course is more rapid and the mor-



**MATERNAL DEATHS IN
NORTH CAROLINA
SINCE AUGUST 1, 1947**

tality higher than in non-gravid patients. Tuberculosis is causing 2½ per cent of our maternal deaths. Only 2 of the 8 fatal cases were diagnosed in the prenatal period, and each of these patients refused to accept satisfactory treatment.

Anesthesia

The fact that 15 deaths resulted directly from anesthetics used for deliveries and operations related to pregnancy is alarming. Spinal anesthesia is particularly hazardous in the presence of toxemia of pregnancy. However, the saddle-block technique, with a hyperbaric solution and a very small dose of the anesthetic agent, was not used for any of the 7 patients who died. Each type of general anesthetic agent has been responsible for one or more deaths. This fact indicates that selection of the anesthetic agent, and skill in its administration are of more importance than the agent *per se*. A careful evaluation of the patient's general condition, transfusions of whole blood to those who are anemic, and selection of special anesthetic agents for patients presenting a complication of pregnancy will materially reduce the number of anesthetic deaths.

Heart disease

Each of the 17 deaths resulting from heart disease was preventable. Early recognition of the presence of a cardiac lesion and careful supervision of the patient are necessary for satisfactory management. Digitalization at the first sign of cardiac failure, and hospitalization with prolonged periods of bed rest may be required. An intercurrent infection in the form of a cold or some other respiratory disease may lead to acute cardiac

failure. The closest supervision is indicated under these circumstances.

Undetermined causes of death

In 19 instances, it was impossible to be certain of the cause for the patient's death from the information available. Some of the patients were unattended in the home at the time of death, and the record of a recent medical examination often contained no plausible explanation. In some cases, a definite cause was not ascertained because of an incomplete examination. Too frequently, however, the patient reported to a physician so late in her final illness that there was not time for a complete examination. Under these conditions, autopsies should be performed. Unfortunately, however, postmortem examinations are made infrequently.

Late obstetric deaths

Sixteen patients died some time after their confinement. Seven of the 8 deaths from tuberculosis occurred from six weeks to six months after delivery, bringing the total number of late deaths to 23. In these 7 cases the disease followed a fulminating course after delivery. The remaining 16 deaths resulted from hypertension and its complications, from cardiac disease, and from infections.

Too little attention has been given to this problem of late obstetric deaths. We can hardly consider the survival of a patient at the time of confinement a medical triumph, if she is to expire a few weeks or months later. Furthermore, the progress of a medical condition resulting from pregnancy, such as hypertension due to nephritis, usually shortens the patient's life expectancy. This

fact must be kept in mind in our decisions concerning the management of obstetric cases.

Summary

Three hundred and twenty obstetric deaths have been fully analyzed by the Maternal Welfare Committee. Of this number 271 were preventable if ideal medical care had been available and had been sought by the patient in time.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSHUA C. TRENT, M.D., F.A.C.S., *Editor*

DURHAM

V

THORACOPLASTY IN PULMONARY TUBERCULOSIS

It is interesting to note that the thorax was the last cavity of the body to be invaded by the surgeon, particularly by the specialized surgeon. Only during the past two decades has the specialty of thoracic surgery arisen—an astounding fact in view of the tremendous strides made in this field during the same period.

Twenty-three years ago Dr. John Alexander⁽¹⁾ analyzed the world results of surgery in the treatment of a disease which had afflicted man for thousands of years. He wrote:

"The surgical management of pulmonary tuberculosis is a relatively new subject . . . Only about 300 cases of pulmonary tuberculosis have been reported as having been operated upon by 17 surgeons in the United States during the past seven years. At the present time there are in this country approximately 30,000 persons with pulmonary tuberculosis who present suitable indications for surgery and who will die of their tuberculosis if they are not operated upon. During the same seven year period only 58 operated cases have been reported from the British Empire, 42 from France, 14 from the Argentine and 2 from Italy. About 1200 cases have been reported by 70 surgeons from Germany, Scandinavia and Switzerland."

The relatively small number of cases reported up to 1925 is rather surprising, since

the first operations deliberately undertaken to relax a tuberculous lung by removal of the overlying ribs were performed by de Cernville⁽²⁾ of Lausanne in 1885. His article, published in that year, demonstrates that he clearly understood the need for breaking the continuity of the unyielding bony thoracic cage in order to effect collapse of pulmonary cavities. De Cernville initially resected in 4 cases as much as 3.5 cm. of the second and third ribs anteriorly, or "as many ribs as necessary, according to the extent of the cavity." From this pioneer work our modern thoracoplasty operation has evolved. The results of these first operations by de Cernville, Quincke, Spengler, and others who followed were unsatisfactory, because the operations were not extensive enough to produce the desired results.

Ludolph Brauer⁽³⁾ of Hamburg was the first to realize that therapeutic success depended upon obtaining pulmonary collapse comparable to that provided by induced pneumothorax. He proposed, therefore, in place of the limited resections done by de Cernville, the complete removal of all ribs from the second through the ninth, in order to obtain compression as well as relaxation. Paul Friedrich performed the first operation as suggested by Brauer on December 11, 1917, and the patient survived. The operation was soon modified to include resection of the first and tenth ribs also. It quickly became apparent that this operation was extremely dangerous. Three of the first 7 patients died. Shock, paradoxical respiration, mediastinal flutter, and circulatory embarrassment followed the Brauer-Friedrich operation. Brauer then made several suggestions to overcome the operative dangers, one of which was that the operation be done in stages. The resulting improvement, however, was not sufficient to insure its popularity. Both Brauer and Friedrich made further modifications in the operation later, again without greatly improving the results.

In 1895 Julien Gourdet⁽⁴⁾ of Nantes showed experimentally that the size of the thoracic cavity was reduced far more after

1. Alexander, John: *Surgery of Pulmonary Tuberculosis*, Philadelphia, Lea & Febiger, 1925. This book stimulated the interest of surgeons everywhere in the surgical management of this disease. In 1937 Dr. Alexander wrote his monumental work, "The Collapse Therapy of Pulmonary Tuberculosis" (Springfield, Ill., C. C. Thomas, 1937), which Archibald called the "most comprehensive treatise on the surgical management of tuberculosis in any language."

2. de Cernville: *De l'intervention opératoire dans les maladies du poulmon*, Rev. med de la Suisse rom., 5:441, 1885.

3. Brauer, L.: *Erfahrungen und Ueberlegungen zur Lungen Kollaps therapie*, Die ausgedehnte extrapleurale Thorakoplastik, Beitr. z. Klin. d. Tuberk., 12:49, 1909.

4. Gourdet, J.: *Thoracoplastie postérieure*, Etude sur l'applatissement comparé du thorax par les différents procédés du resection costale, Paris Institut International de Bibliographie Médicale, 1895.

short paravertebral rib resections than after more extensive lateral, antero-lateral, or anterior rib resections. It fell to Max Wilms⁽⁵⁾ of Heidelberg to demonstrate clinically the truth of Gourdet's experimental observations. In 1911 he resected 3 to 4 cm. of the first eight ribs paravertebrally in a tuberculous patient. The patient was markedly improved. This operation, a compromise between the extensive resections of the Brauer-Friedrich operation and the limited resections of de Cernville, was soon modified so that longer lengths of ribs were removed. After publication of Wilms' work, Ernst Sauerbruch⁽⁶⁾ of Berlin advanced his claim to priority for the operation. According to his statement he had performed a paravertebral thoracoplasty in 1909. Both Wilms and Sauerbruch subsequently introduced many modifications of the operation of paravertebral thoracoplasty as originally described by Wilms. Sauerbruch insisted that the lower ribs should be resected first in order to minimize aspiration of infectious secretions by the lower lung during subsequent stages.

The first thoracoplasty for tuberculosis on the American continent was performed in 1911 by Robert G. LeConte at the Pennsylvania Hospital in Philadelphia. In one stage he resected approximately 1½ inches of the paravertebral portions of the first through the eighth rib. The patient was improved. Lambert and Miller⁽⁷⁾ in 1924 advocated removing the upper rather than the lower ribs at the first stage of a thoracoplasty, and in 1925 Dr. John Alexander and others began to remove increasingly great lengths of the uppermost ribs in multiple stages. Ochsner⁽⁸⁾ and Hedblom⁽⁹⁾ first emphasized the greater safety afforded by multiple stages rather than a one- or two-stage procedure. Thus our modern thoracoplasty has become a multiple-stage operation in which great lengths of the ribs, as well as the transverse processes, are removed over the diseased portion of the lung from above downwards.

In 1925 Dr. Alexander "received a letter from a distinguished physician whose hospital connections included professorships in two University hospitals in one of the largest cities in the United States. He wrote as follows: 'My surgical and medical friends here both agree that they have never seen the slightest benefit from the operation of paravertebral thoracoplasty and they do not recommend it in any case.'"⁽¹⁰⁾ In the short span of twenty-three years this sage opinion has become invalid. Today thoracoplasty is a safe, effective procedure for the control of pulmonary tuberculosis and is performed daily all over the world, restoring to normal, active life many patients otherwise hopelessly ill.

J. C. T.

10. Alexander, John (1), p. 19.

"Detail Man"

Personally, we like most "detail men." In case you haven't had contact with one recently, may we refresh your mind on the subject. Were we Linnaeus, we might describe him thus: Genus: *Homo Sapiens*; Habitat: Distribution almost universal, but becoming scarcer in Middle West due to the draft and lack of enforcement of game laws. (Most Dox think there is a perpetual open-season on these chaps.) Description: A hardy perennial. (Webster's definition of perennial: "continuing or enduring through the year or many years.") And, Boy, does he continue to endure a lot!

Further description: This sub-order of *Homo Sapiens* not infrequently is married and sires one or more little detailettes who depend upon the parent shrub for food and raiment. He has the customary complement of manual and pedal appendages; also, two ears, two eyes, two lungs and—believe it or not—a heart.

Usually he is a gentleman, which in itself is saying a lot. Obviously this rare specimen has an inexhaustible fund of patience, otherwise he would not be willing to cool his heels in your reception room for long periods of time, awaiting your willingness and readiness to see him for five minutes. He knows, of course, that in order to impress him with your importance, he will have to sit on his quadriceps in the outer sanctum until you get darn good and ready to admit him to your august presence . . .

So if you see one of these roving, self-abnegative, hard-working, patient and pleasant fellows beginning to take root in your reception room, for Heaven's sake have the girl bring him in before he becomes a permanent potted plant before your very eyes. Because all of you know how much easier it is to dispose of cut flowers, than a pardiniere full of flowering hydrangeas.

But seriously, Fellows, let's give these boys a break. We are busy, of course, but not *too* busy to spare a few minutes of our time when it easily might be of mutual benefit. Ever hear of the Golden Rule? Think it over sometime; it will do you good.

—J. Phil Edmundson, M.D.

5. Wilms, M.: Eine neue Methode zur Verengerung des Thorax bei Lungen tuberkulose, München, med. Wchnschr. 58:777, 1911.

6. Sauerbruch, E., quoted by Alexander, J., (1), p. 34.

7. Lambert, A. V. and Miller, J. A.: The Surgical Treatment of Pulmonary Tuberculosis, Tr. Assoc. Am. Phys. 39:112-119, 1924.

8. Ochsner, A. J.: Discussion of Archibald, E.: Pulmonary Tuberculosis; Its Surgical Treatment, J.A.M.A. 85:663-668 (Aug. 29) 1925.

9. Hedblom, C. A.: Extrapleural Thoracoplasty in Pulmonary Tuberculosis, J.A.M.A. 86:374 (Jan. 30) 1926.

* The Jackson County Medical Society Weekly Bulletin, March 4, 1944; reprinted in J. Arkansas M. Soc. 44:241 (April) 1948.

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MAY, 1948

THE NINETY-FOURTH ANNUAL SESSION

For its ninety-fourth annual session the Medical Society of the State of North Carolina came back home to Pinehurst. Although Virginia fully lived up to her reputation for hospitality last year, Virginia Beach was a long way from home for most of our members. Last year's attendance was the smallest—except for the Bermuda cruise meeting—since 1924.

This year's registration broke all previous records, with a final score of 920 doctors registered—31 more than attended the 1946 meeting. The exhibits, both technical and scientific, were housed in a tent, connected by a covered walk with the Carolina Hotel. The exhibitors, who were not at all happy over the situation at first, were more than satisfied before the meeting was over. They had much more room in the tent than they had had in the hotel; their wares could be displayed to better advantage; and the doctors kept the tent comfortably filled most of

the time, and overflowing often. The twelve prizes offered—headed by a General Electric refrigerator, which was won by Dr. George Harrell of Winston-Salem—no doubt helped stimulate the attendance on the exhibits. Mr. J. T. Barnes, our new executive secretary, deserves much of the credit for the successful handling of the exhibits.

The House of Delegates, as usual, had a full program; but there was a surprising lack of controversy in its meetings. The absence of Dr. Frank Sharpe was felt throughout the session, but Dr. J. F. Robertson made an excellent presiding officer. His address to the House, although brief, was full of meat. The most important of his recommendations—to raise the annual dues from \$10 to \$25—was passed with very little opposition. The majority of the members realized that the Society is undertaking a program of expansion that will require a greatly increased budget.

Another recommendation which met with general approval was that the by-laws be changed so that the first vice president, rather than the president-elect, would fill the unexpired term of a president dying in office. This custom is followed by other organizations, and is the logical thing to do. One year is long enough to ask any doctor to serve as president of the society; furthermore, it is a somewhat awkward situation for the president-elect to succeed himself as president, rather than to be installed by the retiring president.

The scientific program was good, and well attended. One of the guest speakers who appeared before the general sessions—Dr. J. deJ. Pemberton of the Mayo Clinic—is a native of Fayetteville. He gave an excellent address on thyroid surgery. Dr. Russell Haden, of Cleveland, spoke before the second general session on the anemias, especially the treatment of pernicious anemia. Many afterward said that the classification of the anemias and the treatment of pernicious anemia could not possibly have been made plainer or more practical. Dr. William Friedenwald, of the Department of Bacteriology at Emory, spoke on poliomyelitis. His talk, too, was interesting and informative.

Something of an innovation this year was the panel discussions held by various sections. Even the Officers' Breakfast on Tuesday morning was devoted to a panel discus-

sion of medical organization problems. The sections on Practice of Medicine, Neurology and Psychiatry, General Practice, and Radiology all used the panel system.

The President's Night banquet was featured by the paper of Mr. James H. Clark on the Medical Care Program and a humorous address by Mr. James E. Gheen, of New York. Dr. Oren Moore as toastmaster, with Secretary McMillan as master of ceremonies, ensured the success of the occasion.

The report of the Nominating Committee apparently met with the approval of the great majority of the society. Dr. Westbrook Murphy of Asheville, the president-elect, has earned his recognition by the consistently high quality of the service he has rendered the society and organized medicine. The other officers are as follows: Dr. J. J. Combs, Raleigh, first vice president; Dr. J. A. Elliott, Charlotte, second vice president; Dr. Roscoe D. McMillan, Red Springs, secretary-treasurer.

* * * *

THE AMERICAN ACADEMY OF GENERAL PRACTICE

Faithful readers of this journal may recall that last July most of an editorial on the general practitioner⁽¹⁾ was devoted to a discussion of the American Academy of General Practice, which was organized at the centennial meeting of the American Medical Association. Since then this organization has grown steadily. Some concern was felt at first lest it should become a secession from the A.M.A., or should degenerate into a political pressure group. Representatives from the Academy, however, had a most amicable meeting with the Board of Trustees of the A.M.A. last February. They assured the Board that leaders of the Academy were anxious to cooperate with the parent organization, and asked that representatives from the Board, from the Council on Medical Education and Hospitals, and from the Council on Medical Service be appointed as a liaison committee to the Academy. This request was granted, and there is no reason to doubt that the Academy can do much to carry out its avowed purpose "to promote and maintain high standards of the general practice of Medicine and Surgery."

1. The General Practitioner Has His Innings. Editorial. North Carolina M. J. 8:120 (July) 1917.

A chapter of the American Academy of General Practice has been organized in North Carolina, with Dr. John R. Bender of Winston-Salem as president, Dr. W. A. Sams of Marshall as vice president, and Dr. Roscoe D. McMillan of Red Springs as secretary and treasurer. District councilors are: Dr. John A. Payne, Sunbury, First District; Dr. G. Grady Dixon, Ayden, Second District; Dr. Amos N. Johnson, Garland, Third District; Dr. Henderson Irwin, Eureka, Fourth District; Dr. L. R. Doffermyre, Dunn, Fifth District; Dr. Charles A. Bland, Louisburg, Sixth District; Dr. W. E. Selby, Charlotte, Seventh District; Dr. A. D. Ownbey, Greensboro, Eighth District; Dr. I. E. Shafer, Salisbury, Ninth District; Dr. V. H. Duckett, Canton, Tenth District.

An application blank is to be found following page 280, for the convenience of those who wish to join this organization.

* * * *

EDITORIAL NOTES—THE NINETY- FOURTH ANNUAL SESSION

The panel discussions used by a number of the sections were interesting, and apparently were liked by most of those in attendance. It remains to be seen what their effect upon the NORTH CAROLINA MEDICAL JOURNAL will be. If all those who participated in the panels wrote out their discussions and turned them in to the secretaries of the sections, they should make interesting reading during the year; but if the participants spoke from notes not prepared for publication, this journal may have to stretch its material to make it last through the year.

* * *

Last year, for the first time, the president's address was the feature of the President's Night banquet. This year the precedent was not followed. Since President James Robertson succeeded himself as president, he decided to reserve his speech until next year. Since he will have had eighteen months to prepare his address for the 1949 meeting, the members will expect a real masterpiece.

* * *

The large number who attended the Conjoint Session of the Society and the State Board of Health to hear the final report of Dr. Carl Reynolds as State Health Officer was a tribute to Dr. Reynolds. It is not surprising that Dr. Reynolds was too overcome

with emotion to finish his report, for many of his audience were close to the same point. Under his leadership the State Board of Health has made remarkable progress, as was shown by his report. The best wishes of the doctors of North Carolina go with him as he prepares to show Californians how a model grandfather should conduct himself.

The brief inaugural address of Dr. Roy Norton, who is to succeed Dr. Reynolds as State Health Officer, was a masterpiece, and made a profound impression on his audience. It is the general impression that his selection was a wise choice.

* * *

There was an altogether different atmosphere in the Carolina Hotel this year, as compared with 1946. Even though the registration was larger, the management of the hotel did not seem so hurried and harried; the hotel employees seemed friendlier and more courteous; and the food was better. It must be admitted, also, that the conduct of the members left much less room for criticism. Indeed, the head waiter told Dr. McMillan at lunch Wednesday, in the presence of a reliable witness, that he had never handled a better behaved convention. He did not qualify the statement by saying "medical convention," but "convention"—period!

* * *

"LET NOT THY LEFT HAND KNOW . . ."

The United States Public Health Service certainly follows the old Biblical injunction. As followers of these columns know from recent issues, the distinctly "left" hand of the U.S.P.H.S. and other federal bureaus are marching up and down the land—and even visiting foreign lands—stumping for compulsory federal sickness insurance and government control of medicine, using arguments based upon the supposedly deplorable state of the nation's health. My, Oh My, how sick the nation is, to hear the left hand speak. Goodness me, how the medical profession has failed. It's terrible, how a third of our population can't find a doctor when one is wanted—and how they can't pay him if they do find him.

Now comes the right hand—of the self-same U.S.P.H.S.—in a statement to the press that "the general health of the people of the United States, maintained during the war years at a *higher than prewar level*, continued favorable during the first six months of 1947" quoting Federal Security Administrator Oscar R. Ewing. (Italics ours.) It goes on: "The reported incidence of most of the important communicable diseases, the crude death rate, the maternal and infant mortality, and the specific death rates for certain diseases indicate as good health conditions in the United States during the first half of 1947 as in 1946, if not slightly better." Yes, this is quoted directly from the U.S.P.H.S.

The statement then goes into considerable statistical detail. Since the left hand has screamed so loudly about infant and maternal mortality from the Children's Bureau whose appropriations must go up and up every year if such bureaus are to be supported in the style to which they would like to become accustomed, let us see what the right hand says about the cold facts for 1947. Again, direct quotes from the U.S.P.H.S.: "The estimated maternal mortality rate for deaths from puerperal causes was 1.5 per 1,000 live births for the first six months of 1947, as compared with 1.7 for the corresponding period in 1946; and the adjusted infant mortality rate was estimated to be 34.6 per 1,000 live births for the first six months of 1947, as compared with 38.4 in 1946."

Of course there is plenty of room for improvement; no scientific man would deny it. The medical profession will lower future mortality rates, is constantly doing so, and neither the medical profession nor the great American public needs to be socialized or communized or nazified to do it. Sometimes we wonder how men with the scientific training that Parran, Mountain, Hilleboe, et al, must have had can help but choke on their words when on the one hand they reveal the facts of our constantly improving health standards and on the other they propagandize the country for a socialistic scheme to "improve" health that has wrecked the health of every nation that has let the bureaucrats take over. Perhaps they forget that even the Bible, quoted out of context, can lead to gross misinterpretation.

*Reprinted from the Rocky Mountain Medical Journal 45: 19-20 (Jan.) 1948.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST COLLEGE

A 7-month-old white female infant was admitted to the North Carolina Baptist Hospital on November 29, 1947, with chief complaints of pneumonia, fever, cough, cold, and poor appetite. Two months before admission the patient began to have a runny nose, with sneezing and cough. Her appetite at this time was good. Six weeks before admission the local physician was called and made a diagnosis of pneumonia. The patient was given penicillin orally, one half tablet every three hours, and seemed to improve for a while. When the penicillin was discontinued two days before admission, her condition grew worse. She seemed to be weak and was more irritable. Her appetite became much poorer, but she continued to drink some milk. The cough improved in spite of the patient's weakness. On the day of admission she became worse, and about six hours before admission she began to breathe with difficulty.

Physical examination showed the temperature to be 103 F., the pulse 160, respirations 80. The baby was thin and undernourished. Her skin was dry and pale, and breathing was rapid and shallow. The patient was listless and only slightly responsive. The anterior fontanelle was patent, but there was no craniotabes. The eyes were sunken. Both ear drums were reddened and injected, especially the right; there were no distortions of landmarks, however. The lips and mucous membranes were dry. The tongue was slightly coated and the pharynx was moderately injected. Retraction of the interspaces was noted on inspiration. Moist, sticky rales were heard over the lung fields posteriorly, especially on the right; rales were also heard over the anterior portion of the chest. There were no evidences of consolidation, and no impairment of breath sounds or resonance. The heart was rapid and the pulse difficult to count, but there were no detectable arrhythmias or murmurs. The liver was felt one finger's breadth below the costal margin in the midclavicular line. The spleen was not palpable. No masses were felt in the abdomen. The genitalia

were normal, and rectal examination was not remarkable. There was slight cyanosis of the nails; otherwise the extremities were well developed without deformities. Reflexes were physiological.

A blood count showed 4,890,000 red blood cells, with 14 Gm. of hemoglobin, and 52,750 white blood cells with 24 per cent segmented polymorphonuclears, 54 per cent non-segmented, and 22 per cent lymphocytes. The urinalysis showed a specific gravity of 1.009 and a negative reaction for albumin and sugar; microscopic examination showed an occasional white cell and epithelial cell in the sediment. The stools were yellow, formed, and had a foul odor. Numerous fat globules were seen in the stool, but no starch or occult blood was present. The blood culture was sterile. A throat culture revealed beta hemolytic streptococci, non-hemolytic staphylococci, and coliform organisms. Trypsin digestion tests on duodenal fluid showed no liquefaction of the gelatin at the end of twenty-four hours. The Schick and tuberculin tests were negative.

An x-ray of the chest revealed a marked increase in bronchovascular markings in the hilar region, extending out into the periphery of the lung field. The extreme periphery of the lung fields was clear. The heart showed nothing remarkable.

During her hospital stay of fifteen days, the patient was treated with penicillin intramuscularly. On the fifth hospital day, streptomycin was begun and was continued through the eleventh hospital day. Penicillin aerosol was begun on the fourth hospital day and continued through the tenth hospital day. She was also given frequent intravenous injections of fluids, including plasma and whole blood. In spite of this therapy her condition remained critical. At no time did she show any evidence of diarrhea or disturbance in bowel function. During the first week the temperature ranged between 98 and 101 F., and during the second week it ranged between 99 and 102 F. She expired quietly on the fifteenth hospital day.

Discussion

DR. WESTON M. KELSEY: This protocol can be summarized rapidly. The infant was apparently well until the age of 5 months, when she developed bronchopneumonia which persisted for two months in spite of

treatment with antibiotic and chemotherapeutic agents. The important accessory clinical findings were the presence of microscopic neutral fat in the stools, and the absence of trypsin in the duodenal juice. The patient went down hill rapidly and died. Since these findings make the diagnosis of "cystic disease of the pancreas" obligatory, this case will be used to discuss the diagnostic problems in this disease.

In general, the history obtained at the time of admission depends on the age of the patient. Andersen⁽¹⁾ has pointed out that these cases may be divided into three categories: (1) those which begin at birth; (2) those which begin before the age of 6 months; and (3) those in which the symptoms develop at a later age. The first group are nearly always characterized by intestinal obstruction with meconium ileus. In approximately one third of Andersen's cases which fell in the second group, the first sign of trouble was cough; in the remaining two thirds there were gastrointestinal symptoms, which often were minimal and were described only after specific questioning. In the last group the majority of patients presented the picture of "celiac disease," with the typical large, foamy, foul stools.

Blackfan and May⁽²⁾ state that the early symptoms of cystic fibrosis can mimic almost any disease seen in the second age group. Vomiting, feeding problems, and failure to gain are almost always noted before there is either diarrhea or cough. I am almost certain that a review of this case will reveal that feeding problems were present before the onset of pneumonia.

DR. ADERHOLDT: This patient was difficult to feed and had failed to gain at a normal rate.

DR. KELSEY: The usual findings on physical examination are those noted in this patient. The infant is malnourished. The respiratory symptoms usually predominate, and are characterized by a hard cough which is similar to that seen in whooping cough. Frequently there is no evidence of consolidation. The rales are coarse and are heard over the entire chest. Cyanosis is common in the

more severe cases.

Laboratory studies are necessary to establish the diagnosis. Of these the most important are examination of the stool and analyses of the duodenal enzymes. The stools may be small or large, loose or constipated, or normal in gross appearance. Regardless of the appearance, they usually have a peculiar, foul odor. The presence of fat in the stool may be determined by either chemical or microscopic study. The former method is not practical, while the latter is simple. Andersen⁽³⁾ has described the criteria for determining microscopically the presence of excessive fat in the stools. The results of her determinations correlated closely both with chemical studies, and with postmortem and clinical observations.

There are two relatively common conditions which cause an increase in neutral stool fat: celiac disease and obstructions of the common bile duct. The rare causes of this condition are intestinal allergy, giardiasis, tuberculous mesenteric lymphadenitis, and intestinal lipodystrophy. False positive tests are seen in patients who have received mineral oil. False negative tests occur if the patient is on a fat-free diet. Andersen makes the statement that "absence of fat on a normal diet excludes fibrocystic disease." In all but one of the 15 patients with fibrocystic disease whom we have seen, excessive fat in the stools was demonstrated by this method.

Our experience would indicate that the presence of twenty or more globules of fat per low-power field on repeated examinations certainly warrants duodenal drainage. Ordinarily the tube enters the duodenum easily, but at times it must be manipulated under the fluoroscope. If the patient has fibrocystic disease, the juice is usually scant and viscid. It should be bile-stained and have a pH above 6.5. Analysis for trypsin is done according to the technique of Andersen⁽⁴⁾. It is possible for an error to result from failure to have the tube in the duodenum. Tests which fail to demonstrate trypsin should be repeated. Theoretically, tests which are positive for trypsin cannot be in error, and they need not be repeated. The presence of trypsin rules out the possibility of fibro-

1. Andersen, D. H.: Cystic Fibrosis of the Pancreas and Its Relation to Celiac Disease: A Clinical and Pathologic Study, *Am. J. Dis. Child.* 56:344-399 (Aug.) 1938.

2. Blackfan, K. D., and May, C. D.: Inspissation of Secretion, Dilatation of the Ducts and Acini, Atrophy and Fibrosis of the Pancreas in Infants: Clinical Note, *J. Pediat.* 13:627-634 (Nov.) 1938.

3. Andersen, D. H.: Celiac Syndrome; Determination of Fat in Feces, *Am. J. Dis. Child.* 69:141-151 (March) 1945.

4. Andersen, D. H.: Pancreatic Enzymes in the Duodenal Juice in the Celiac Syndrome, *Am. J. Dis. Child.* 63:648-658 (April) 1942.

cystic disease. Absence of trypsin on repeated drainages has been described in only one patient who did not have the disease⁽⁵⁾, and makes the diagnosis almost certain.

The diet and treatment of the pulmonary infection are the two important aspects of therapy. The diet should be high in protein and carbohydrate, and low in fat and starch. Pancreatin occasionally will help. The intake of vitamins A and D should be considerably increased⁽⁶⁾. The bronchial infection is usually treated most satisfactorily with penicillin aerosol⁽⁷⁾. These patients are surviving for much longer periods than before the above mentioned therapeutic measures were used, and it is possible that the prognosis might be good if the diagnosis were made before the onset of respiratory symptoms. The prognosis is still poor in the infant with an early onset of pulmonary disease.

The etiology of fibrocystic disease is not known. It is a congenital and familial disease. Six siblings of the fifteen patients we have had with this disease have died with symptoms compatible with the diagnosis of fibrocystic disease. I have asked Dr. Herndon to discuss the hereditary aspect.

DR. NASH HERNDON: Although several authors⁽⁸⁾ have reported multiple cases of cystic fibrosis of the pancreas within a sibship, the most adequately described series of cases collected in a manner suitable for genetic analysis is that of Andersen and Hodges⁽⁹⁾. They reported all cases diagnosed at the Babies Hospital in New York from 1938 to 1945, including data on 60 patients. An analysis of the familial incidence in this group gives evidence that the disease may be due to the action of a simple recessive gene, and that the condition develops in individuals who are homozygous for this gene. Data on 55 other sibships collected from the literature are also compatible with this conclusion.

The question of the incidence of this dis-

ease in the general population is of considerable interest. The incidence reported in autopsy material varies from 1.3 per cent to 4.8 per cent, about 3 per cent being the usual figure given⁽¹⁰⁾. Andersen has estimated the incidence of the disease to be around 1.7 to 1.8 per thousand live births in New York state. There are obvious difficulties in estimating the frequency of a disease from a series of hospital admissions or an autopsy series. However, a very rough estimate of the number of persons who are heterozygous for the recessive gene—"carriers" of the disease—can be made from the above figures, and is found to be around 8 per cent of the population. One would then expect that about six marriages per thousand would represent the mating of two heterozygotes, and might produce children with the disease. Because of the small size of human families and the fact that only one fourth of the children of such marriages would be affected, any clinical survey would make it appear that the proportion of families affected is considerably smaller. This estimate of a rather high incidence of the disease in the population is also supported by the absence of cousin marriages among the parents of patients in Andersen's series, and the fact that only one case report in the literature reports kinship of the parents⁽¹¹⁾. In diseases due to recessive genes, the frequency of consanguineous matings among the parents of affected individuals is inversely related to the frequency of the disease—or, more specifically, to the frequency of the gene; in extremely rare diseases the rate of cousin marriages among the parents of affected individuals may be as high as 50 per cent. The lack of cousin marriages in the reported cases confirms the impression that the disease is much more common than one would gather from the number of diagnoses made. As physicians become more familiar with the syndrome, this disease will probably be diagnosed during life much more frequently.

DR. KELSEY: The diagnosis is not quite so easy as has been implied. Three of our cases illustrate some of the problems. Baby H. was admitted at 3 months of age because of failure to gain. He had had one fourteen-day

5. Muldock, C. L., Farber, S., and Shwachman, H.: Pancreatic Function and Disease in Early Life, *Am. J. Dis. Child.* 66:370-375 (Oct.) 1943.
6. Andersen, D. H.: Celiac Syndrome: Dietary Therapy for Congenital Pancreatic Deficiency, *Am. J. Dis. Child.* 50: 100-113 (Aug.) 1945.
7. di Sant'Agnese, P. E. A., and Andersen, D. H.: Celiac Syndrome: Chemotherapy in Infections of the Respiratory Tract Associated with Cystic Fibrosis of the Pancreas: Observations with Penicillin and Drugs of the Sulfonamide Group, with Special Reference to Penicillin Aerosol, *Am. J. Dis. Child.* 72:17-61 (July) 1946.
8. Howard, P. J.: Familial Character of Fibrocystic Disease of the Pancreas, *Am. J. Dis. Child.* 68:330-332 (Nov.) 1941.
9. Andersen, D. H., and Hodges, R. G.: Celiac Syndrome: Genetics of Cystic Fibrosis of the Pancreas with a Consideration of Etiology, *Am. J. Dis. Child.* 72:62-80 (July) 1946.

10. Wiglesworth, F. W.: Fibrocystic Disease of the Pancreas, *Am. J. M. Sc.* 212:331-365 (Sept.) 1946.
11. Garrod, A. E., and Hurley, W. H.: Congenital Family Steatorrhea, *Quart. J. Med.* 6:242-258 (Jan.) 1913.

episode of watery diarrhea when 6 weeks old, and the stools had always been foul. The stools did not have excessive fat, but two duodenal drainages failed to reveal any trypsin. He could be one of the rare patients without cystic fibrosis who does not have demonstrable trypsin. Baby A. was admitted because of convulsions, and was noted to have foul stools. There was excessive fat, and no trypsin was found. She has done well over a twenty-month period. It has been found that the only dietary control necessary for adequate growth is pancreatin. Without pancreatin, the stools become characteristic of celiac disease. She has had no pulmonary complications. Because of the doubt as to the diagnosis, she has had five drainages, all negative for trypsin. Baby B. was admitted at 10 months of age with a history typical of the disease. Excessive fat was demonstrated in the stools, but, to our surprise, trypsin was present in moderate amounts. She went down hill rapidly, and died from advanced bronchiectasis. Autopsy was not obtained.

We feel that either repeated pulmonary infections or chronic gastrointestinal disturbances in patients under a year of age warrant examination of the stools for fat. If this is found, we feel that duodenal drainage should be performed. If excessive fat is present in the stools and trypsin is absent in the duodenal juices, the diagnosis of cystic fibrosis of the pancreas must be made.

Anatomic Discussion

DR. LADD W. HAMRICK, JR.: The significant anatomical findings were in the pancreas, lungs, and liver. The pancreas weighed 15 Gm. and presented no gross abnormalities, except for slightly increased resistance on sectioning. Microscopic examination showed dilatation of the majority of the acini and ducts, with atrophy of the lining cells; the lumina of these structures contained pink-staining laminated concretions. The interstitial connective tissue was increased, and a moderate degree of interstitial lymphocytic infiltration was present.

The lungs presented fibrous pleural adhesions on their posterior surfaces, and many small, closely adjacent areas of consolidation on cut section. The bronchi contained large amounts of yellow, purulent material. Microscopic examination showed both acute and

chronic bronchopneumonia, marked interstitial fibrosis, and chronic bronchitis with destruction of many of the bronchial walls. Culture of the lungs revealed a pure growth of *Staphylococcus aureus*.

The liver showed fatty metamorphosis.

Anatomic Diagnoses

1. *Cystic fibrosis of the pancreas*
2. *Bronchopneumonia, acute and chronic, bilateral (Staphylococcus aureus)*
3. *Chronic bronchitis with bronchial destruction, bilateral*
4. *Chronic interstitial pulmonary fibrosis, bilateral*
5. *Chronic fibrous pleuritis, bilateral*
6. *Fatty metamorphosis of the liver*

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

MASTER AND SERVANT: *Neurosis which results from an injury arising out of and in the course of employment, and produces disability, is compensable, whether of functional or of organic origin.*

The records show that the plaintiff in this case suffered personal injuries from an accident which arose out of and in the course of her employment. While she was sharpening razor blades, pieces of a broken blade, propelled from a machine employed in the sharpening process, struck her in the right eye, on the nose, about the right arm, and on the little finger of the right hand. The employee suffered an extensive horizontal laceration of the cornea, and, despite immediate surgical intervention, she lost the vision in the injured eye. A medical examination disclosed some tremor, hyperactive deep reflexes, and unsteadiness of gait. She lost weight and suffered from fainting spells. The subjective symptoms were pain in the arms and right hand, weakness of the right hand, headaches, vertigo, insomnia, and somnambulism. The employee was awarded total compensation for the loss of the eye, and 10 per cent of total permanent disability for impairment due to a neurosis.

The commissioner hearing the case was of the opinion that there was substantial basis for a finding that the physical injuries,

other than the laceration of the eye, contributed to the plaintiff's neurotic condition. Further, it was brought out that she had had marital difficulties, and her physician testified that as a result she was fertile ground for the development of a psychoneurosis. The physician, an expert neurologist, testified, however, that "trauma was unquestionably the exciting and precipitating cause of the neurosis," and that "superimposed psychoneurosis certainly adds to the disability (that resulting from the loss of vision)."

From the findings of the Workman's Compensation Commission the defendant appealed to the appellate court. In doing so he conceded that there was evidence to sustain the finding that the neurosis was a result of the accident, but insisted that it was a disability incident to the loss of the eye, and that compensation therefor was included in that prescribed for the loss of vision in the injured eye. The appellate court did not hold with the appellant that the injury to the eye was the sole cause for the development of the neurosis. The court indicated that in its opinion the evidence was sufficient to show that other physical injuries contributed to the production of the emotional disorder, and that the marital difficulties noted above must be considered predisposing factors. In explanation the justice writing the opinion said, "the construction contended for by the appellant, if carried to its logical conclusion, would deny compensation for both eyes if the sight of the left eye were destroyed as a result of a sympathetic ophthalmia, consequent upon an injury to the right eye. The loss of the left eye from sympathetic affection, if that occurred, would be a mere incident of the injury to the right eye. And there could be no recovery for the disability resulting from the consequent neurosis, even though, in its paralysis of bodily function, it was a disability that far exceeded the loss of an eye in its disastrous consequences to the victim."

From the above case we may assume that the law recognizes emotional disorders, such as the neuroses, as being disease entities and compensable to the same extent as similar disabilities occurring in organic diseases. Other courts are in agreement. Because of the prevailing opinion of many laymen that emotional disorders are purely imaginary it

has, in the past, been very difficult for those suffering from this type of illness to secure the rights to which they are legally entitled. Difficulties in this respect occur not only in matters actually before the courts but in informal negotiations with insurance companies, employers, and others. It seems, therefore, that when a patient has a meritorious cause of action based upon a disability arising from an emotional disorder, it is the duty of his physician to establish or to help establish the facts in such a manner as to protect the patient. In such cases the conscientious efforts of the trained physician will do more than anything else to ensure justice to all concerned.

(Court of Errors and Appeals of New Jersey, May, 1933. V. 166, Atlantic Reporter, p. 518.)

TUBERCULOSIS ABSTRACTS

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THE economic importance of controlling tuberculosis is often overlooked because the humanitarian aspect is so compelling. Therefore, it is good to be reminded that it is business organizations, established for profit, which have furnished much of the clear-cut unmistakable evidence that the control of tuberculosis is both possible and practical with the means now at our disposal.

TUBERCULOSIS CONTROL IN INDUSTRY

Tuberculosis control among employees of The Eastman Kodak Company was begun in 1921 with a roentgenographic survey of the chests. In 1923 it was enlarged to include periodic roentgenograms of the chests of all employees as well as the examination of applicants.

In a report made by Dr. William A. Sawyer in 1939, this work was reviewed for the years 1923 to 1937. At that time the incidence of active disease per thousand employees in three-year periods was shown to have dropped from 2.08 in the period 1923 to 1925 to 0.47 in the period 1935 to 1937. During the war years the labor turnover was unusually high, and therefore the incidence cannot accurately be determined. In only 18 persons did active pulmonary tuberculosis develop over a period of five years, among employees increasing in number from 6,000 in 1941 to 10,000 in 1945. Though the increment was only 4,000, the number of applicants employed for varying periods of time during the period 1941 to 1945 totaled 20,500. Active pulmonary tuberculosis appeared at all age levels. The ratio of the number of cases in each decade to the percentage in each ten-year group employed is nearly uniform throughout.

Those in the higher age groups might even be regarded as more vulnerable to tuberculosis, since

they have been subject to a "weeding out" process over the years. Those who survive have the same attack rate as those aged 20 to 40 years, usually considered to be more vulnerable.

At the present time two per cent of all employees have roentgenograms of the chest classified as indicating pulmonary tuberculosis, minimal inactive.

Following the preemployment roentgenogram, routine 14 by 17 inch roentgenograms are retaken as follows:

Age When Employed	Years Between Routine Roentgenograms
To 25 years	1, 3 and 5
25-34 years	2, 3 and 5
35 to retirement	3 and 5 and every 5 years thereafter

In addition roentgenograms are taken after prolonged absence for any reason, and in the presence of suggestive symptoms.

The majority of the group (11 cases) in which active pulmonary tuberculosis developed later had roentgenograms of the chest indicating abnormalities at the time of employment. In three cases this was an "apical cap," a term used to describe a crescentic, homogenous soft tissue density, over the dome of the apex of the lung.

Stage of Disease When Discovered to be Active

The one case of far advanced disease discovered contradicts an oft repeated rule, namely, that a person with a normal roentgenogram of the chest at age 40 will never have active pulmonary tuberculosis. This woman, aged 56 at the time of employment, had what was considered to be an inactive infraclavicular lesion. One year after employment she was taken acutely ill with what appeared to be virus pneumonia. Three weeks after onset of the disease her sputum contained tubercle bacilli, and in six weeks a 5 cm. cavity developed.

Signs and Symptoms Accompanying Active Disease

Each person was carefully interviewed for a history of his disease in retrospect. In only one could the symptoms elicited be said to have been more than suggestive; an acute respiratory infection with a small hemoptysis.

There were two cases in which pneumonia was the presenting symptom. In each instance it was considered to be of the virus type early in its course.

Location and Spread of Lesions

In recent years, the importance and gravity of an infraclavicular lesion have been emphasized. Earlier it was held generally that in adults all pulmonary tuberculosis began in the apex, producing symptoms and signs of "consumption" as the lesion extended downward below the clavicle. In this small series, apparently inactive lesions in both apex and infraclavicular regions have been the starting point of active disease.

Years Between Employment and Tuberculous Activity

In mass surveys the question of frequency of reexamination arises. Do roentgenograms of the chest which are negative and "clinically not significant" for one, three or five years imply life-long freedom from active disease? The answer is indubitably no; repeated roentgenograms at regular intervals, after prolonged absences and in the presence of suggestive symptoms are indicated. The four persons in whom active pulmonary tuberculosis developed upward of 10 years after their employment had had minimal inactive infection throughout that period; the lesions had appeared hard, and serial roentgenograms had shown no change.

Duration of Treatment

It has long been known that the time required to arrest active pulmonary tuberculosis is closely correlated with the stage of disease when treatment is instituted. Six to 18 months is usually required to arrest minimal lesions. In only two cases of this series was this time exceeded.

All of the minimal infections were treated by rest alone. Pneumothorax was successful in controlling moderately advanced disease, and the person thus affected was returned to work after 18 months, therapeutic pneumothorax being maintained.

Tuberculosis Control in Industry, Charles R. Allison, M.D., Occupational Medicine, September, 1946.

PUBLIC RELATIONS

This is the first year that our Society has had a Public Relations Committee which is really functioning. It seems to have come on the scene as the natural result of a desire to combat certain elements and tendencies which have arisen, and it is a logical development by means of which we can sell the public on prepaid hospital or sickness insurance, or both; can put across the objectives of the North Carolina Medical Care Commission; and can build up good will generally. In the space of a few months this committee has become one of our most important agencies, and also one of our most expensive undertakings. The most potent means of acquainting the public with our views is through the press and radio, and both these mediums cost money. Yet not one of us would now feel that we could get along without this important committee. There is hardly an activity undertaken by our Society which can not be helped and supported by well directed public relations. Indeed, it would be difficult to put over many worthwhile activities without the spadework of the Public Relations Committee.

We must realize, as we never have before, that to maintain our position of influence and leadership, and to progress, we must ever be on the alert with well directed and appropriate publicity. No organization can stand aloof and not interest itself in public affairs or in politics if it is dependent on the public, as we are, for its very existence.

A case in point I would like to call to your attention: The last General Assembly appropriated funds which, with funds provided by the Hill-Burton bill, are to be used for the construction of a large teaching hospital at Chapel Hill and other necessary installations so that a four-year medical school can

be inaugurated. This act also made available funds which will supplement funds from the Hill-Burton bill to assist counties in the construction of health centers in rural areas. These provisions are all splendid and will go a long way toward providing medical care for the people of our state; but the Assembly made no provision for the maintenance of these agencies or for the salaries of professors and teachers in the new four-year medical school. It must be our duty, therefore, as physicians and as guardians of the health of our communities, to get in touch with our representatives and see that the next Assembly passes an enabling act to provide for a top-flight faculty and for the proper maintenance of the four-year medical school. The present act provides, as it should, that the counties in which health centers are to be located must provide funds to maintain the clinics or hospitals built. I ask you to keep up the good work this committee is doing. Strive to make the practice of medicine practical and the cost as reasonable as possible. Let us dispense with as many gadgets as we can without compromising our duty in determining the diagnosis. These gadgets are the things that make sickness expensive, and the more expensive sickness becomes the more certain people are to turn to government medicine as the only solution.

I will call your attention to a situation which has arisen in the past few years and which, if state medicine were thrust upon us, would certainly work hardships and injustice on physicians. The chief aim and purpose of a young physician just entering private practice or beginning his hospital training nowadays is to "get off his boards." During World War II, certification by a "board" seemed to be the important consideration in deciding the assignment and rank a medical officer should have. The alert young graduate, therefore, sees very clearly that in the event of another war or government control of medicine, the board diplomate would occupy the position of preference. Under state medicine, a baby delivered by the family doctor would probably cost from \$35 to \$50, depending upon the locality in which the patient lived; for a baby delivered by a board diplomate the fee would be \$75 to \$100. I know of one specialist who delivers babies only on Tuesdays and Thursdays. His fee would probably be \$200.

Boards have their place, and have a wholesome influence in inducing young graduates to secure adequate hospital training before going into private practice. Experience gained in actual practice with a group or other specialists, natural ability, and the will to continue to learn and keep abreast of the forward march of medicine, however, are the criteria by which doctors should be judged in being evaluated for service to the public or for a government service or agency.

J. F. ROBERTSON, M.D.
Wilmington

BULLETIN BOARD

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

The Duke Eastern North Carolina Postgraduate Course will be held June 8-11 at the Duke University School of Medicine. Announcements will be sent to physicians in this area.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Henry Shepard Fuller, assistant professor of preventive medicine and attending physician of the VA regional office in Winston-Salem, has been awarded a fellowship in medical research by the Guggenheim Memorial Foundation. The project that he will pursue under the fellowship will involve studies of the taxonomy and distribution of mites of the family Trombiculidae in relation to their transmission of disease. During a six months' leave of absence from the medical school he will spend three months in Washington, D. C., and three months at the Rocky Mountain Laboratory of the U. S. Public Health Service at Hamilton, Montana.

* * *

Dr. Lloyd J. Thompson, head of the department of neuropsychiatry, lectured in Richmond on April 16 at the final session of the Virginia Institute Seminar in Psychiatry and Neurology. His subject was "Organic Reactions." The Seminar was held under auspices of the Virginia Department of Mental Hygiene and Hospitals, the American Psychiatric Association, the Medical Society of Virginia, and the U. S. Public Health Service.

On April 23, Dr. Thompson and Dr. Richard Masland, also of the department of neuropsychiatry, went to the VA hospital at Fayetteville for lectures and clinics. Dr. Thompson's subject was "War Neuroses" and Dr. Masland's, "Intracranial Arterial Aneurysms."

* * *

Dr. Harold D. Green, head of the department of physiology and pharmacology, attended sessions of the Scientific Council of the American Foundation for High Blood Pressure in Cleveland, Ohio, April 30 and May 1. Dr. Green is a member of the subcommittee which will outline a book to be published by the Foundation for those interested in supporting such research.

Dr. Frank Lock, head of the department of obstetrics and gynecology at Bowman Gray School of Medicine, was guest speaker for the section on obstetrics and gynecology of the Louisiana State Medical Society at the meeting in Monroe, La., April 12-19. His subject was "Recent Advances in Maternity Care."

* * * *

Dr. W. E. Cornatzer and Dr. Camillo Artom, of the department of biochemistry, presented a paper for the section on biochemistry and physiology at the forty-fifth annual meeting of the North Carolina Academy of Science, May 7 and 8 at Davidson College. Subject of the paper was "The Relation of Chemical Structure to the Stimulation of Lipide Phosphorylation."

* * * *

Dr. Robert B. Lawson, of the department of pediatrics, spoke on "Present Concepts Regarding the Spread and Treatment of Poliomyelitis" at the meeting of the Georgia State Medical Society in Atlanta on April 28.

* * * *

Dr. Wingate M. Johnson, professor of clinical medicine, was guest speaker at the eighty-first annual meeting of the State Medical Society of Texas in Houston, April 26 to 29. He spoke on "Pancreatitis" at the general meeting and on "The Training of Students as General Practitioners" at the clinical luncheon of the section on general practice. He also spoke on the "Relationship of the General Practitioner to the Overall Health Program" at a subsequent meeting of the section on general practice.

* * * *

Dr. MacDonald Fulton, professor of bacteriology, was re-elected secretary of the North Carolina Society of Bacteriologists at a meeting held at Duke University Hospital in Durham on May 1. Papers were presented at the meeting by Dr. Manson Meads, Miss Martha Chilton, Mrs. Thelma Tucker, and Dr. Fulton, all of the staff of the Bowman Gray School of Medicine.

NEWS NOTES FROM THE STATE BOARD
OF HEALTH

Dr. Carl V. Reynolds, State Health Officer, has been awarded life membership in the American Social Hygiene Association for outstanding services in fighting venereal diseases.

NEWS NOTES FROM THE NORTH CAROLINA
TUBERCULOSIS ASSOCIATION

Among those participating in the annual meeting of the North Carolina Tuberculosis Association, held in Raleigh on May 17 and 18, were Dr. Hillis L. Seay, president of the Association, and Drs. H. Stuart Willis, David T. Smith, B. B. Bagby, W. M. Peck, J. S. Hiatt, Josiah Trent, J. J. Combs, H. McLeod Riggins, W. Reece Berryhill, S. B. McPheeters, Carl C. Aven, A. Derwin Cooper, and Edward G. McGavran. Mrs. Paul P. McCain reported on the Christmas Seal Sale, which was the most successful in history. The total amount received from the sale was \$367,414.54—10 per cent more than the 1946 total.

* * * *

Dr. Esmond R. Long, director of Medical Research and Therapy for the National Tuberculosis Association, has been named editor-in-chief of the *American Review of Tuberculosis*, to succeed the late Dr. Max Pinner.

CARTERET COUNTY MEDICAL SOCIETY

The Carteret County Medical Society held its regular monthly dinner meeting at the Morehead City hospital, the hospital being host. The scientific program consisted of a case report by Dr. Theodore Salter of Beaufort. Dr. J. W. Morris made a report for the committee from the society which appeared before the Board of County Commissioners on April 5, requesting more funds for the County Welfare Department to be used for hospitalization of indigent patients. According to Dr. Morris the request was favorably received.

Dr. Louis Hayman, of Cherry Point, was received as a new member of the hospital staff and the county medical society.

At the March meeting of the Carteret County Medical Society the matter of rebates and fee-splitting was strongly condemned, and the delegate to the State Medical Society was instructed to carry this sentiment before the House of Delegates in a very positive manner.

The officers of the Carteret County Medical Society are Dr. J. W. Morris, president, Morehead City, and Dr. Frank E. Hyde, secretary, Beaufort.

Reported by:
N. THOMAS ENNETT, M.D.
County Health Officer
Beaufort, N. C.

CATAWBA VALLEY MEDICAL SOCIETY

A dinner meeting of the Catawba Valley Medical Society was held in Lincolnton on April 20. The program, which was arranged by the Lincoln County Society, consisted of three papers on the subject of gastro-intestinal hemorrhage by Dr. James F. Reinhardt, Dr. W. G. Page, and Dr. John H. Fitzgerald, and a case report by Dr. W. V. Costner.

EDGECOMBE-NASH COUNTIES MEDICAL
SOCIETY

The April meeting of the Edgecombe-Nash Counties Medical Society, which was held in Rocky Mount on April 14, was devoted to an open discussion regarding practices of the Society.

At the suggestion of the Society, a blood bank and a cancer detection service have been set up in Rocky Mount. The former is sponsored by the Junior Chamber of Commerce and the American Red Cross, the latter by the Business and Professional Women's Club and the American Cancer Society.

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society held a dinner meeting in Winston-Salem on April 13. The program consisted of a symposium on cancer.

NEWS NOTES

Dr. Carroll C. Lupton has announced the opening of offices for the practice of general surgery in Greensboro.

NATIONAL GASTROENTEROLOGICAL
ASSOCIATION

The thirteenth annual convention of the National Gastroenterological Association will be held June 7-10 at the Hotel Pennsylvania in New York. Members of the medical profession are cordially invited to attend.

NATIONAL CONFERENCE OF COUNTY MEDICAL SOCIETY OFFICERS

The Third National Conference of County Medical Society Officers will be held at the Palmer House, Chicago, on June 20.

The purpose of this Conference is "To Develop a Working Partnership Between the American Medical Association and Every Physician." Although the program is directed primarily to officers of the county medical societies, any member of the A.M.A. is welcome to attend and participate in the discussion.

GOLF TOURNAMENT

The American Medical Golfing Association will hold its Thirty-second Tournament on Monday, June 21. The famous Olympia Fields has been reserved for the medical golfers' tournament. Dinner will be held in Olympia Fields Clubhouse, after which prizes will be awarded.

All male Fellows of the American Medical Association are cordially invited to become Fellows of the American Medical Golfing Association; write Secretary Bill Burns, 2020 Olds Tower, Lansing 8, Michigan for application blank.

UNIVERSITY OF PENNSYLVANIA MEDICAL ALUMNI

University of Pennsylvania Medical Alumni will hold a dinner at the Convention of the American Medical Association in Chicago, Wednesday, June 23, 1948, at the Lake Shore Club, 850 Lake Shore Drive. On arrival in Chicago, alumni should get in touch with Miss Frances R. Houston, executive secretary of the Medical Alumni Society, at the University of Pennsylvania registration booth.

CHICAGO MEDICAL SOCIETY

The Chicago Medical Society is offering physicians of the country two postgraduate courses in September. A course in Hematology and Neurology will be given September 13-18, and another in Cardiovascular and Respiratory Diseases will be given September 20-25, 1948. The sessions will be held in Thorne Hall on Northwestern University Medical School campus. An outstanding group of teachers from all sections of the United States will make up the faculty.

Information may be secured by writing the Chairman, Committee on Postgraduate Medical Education, Chicago Medical Society, 30 North Michigan Avenue, Chicago 2, Illinois.

AMERICAN UROLOGICAL ASSOCIATION

The Southeastern Section of the American Urological Association announces receipt of a \$1000 donation from Mr. and Mrs. William R. McEwen, Ft. Lauderdale, Florida. The fund is to be used to stimulate research on the problem of "Urinary Bladder Dysfunction." An award of \$250 will be made for the best essay presented before the Annual Meeting of the Southeastern Section. Competition is open to men who have graduated from medical school within the past ten years. Further information may be obtained by writing to Dr. Russell B. Carson, 408 Sweet Building, Ft. Lauderdale, Florida, secretary-treasurer.

(BULLETIN BOARD CONTINUED ON PAGE 282)

Classified Advertisements

RESIDENT PHYSICIAN WANTED

Private hospital specializing in treatment of alcoholism and narcotic addiction desires high type person, male or female, for permanent position. Salary open.

Address C. B. T.,
P. O. Box 456,
Winston-Salem, N. C.

ASSOCIATE WANTED

WANTED: A young or middle-aged eye, ear, nose and throat specialist as an associate in a well established practice.

Address replies to Box 292, Wilson, N. C.

PATHOLOGIST AVAILABLE

Pathologist of long experience, certified in clinical pathology by the American Board of Pathology, available as director of hospital laboratories in North Carolina or Virginia.

Address "Clinical Pathologist"
Post Office Box 456
Winston-Salem, N. C.

BOOK REVIEWS

Treatment in General Practice. By Harry Beckman, M.D., Professor of Pharmacology, Marquette University School of Medicine, Milwaukee, Wisconsin. Ed. 6. 1129 pages. Price, \$11.50. Philadelphia and London: W. B. Saunders Company, 1948.

Beckman's *Treatment* has made for itself a recognized place as a reference work on the latest and most approved methods of treating the conditions commonly seen in general practice. The sixth edition, just off the Saunders press, maintains the high standard set by its predecessors for reliability and readability. The author has kept the clear style and humorous touch which make reading the book pleasant as well as profitable.

The fact that the sixth edition contains some hundred pages more than the fourth and sixty more than the fifth gives some idea of the rapid advances being made in therapy. It is fitting that such an admirable work on treatment should be revised often enough to keep one reasonably well abreast with the remarkable progress of therapeutics.

A Primer of Cardiology. By George E. Burch, M.D., F.A.C.P., and Paul Resser, M.D. 272 pages. Price, \$4.50. Philadelphia: Lea and Febiger, 1947.

This is one of the most desirable and useful of the many treatises on cardiovascular diseases. It is compact and yet reasonably complete in scientific detail. Especially good are the chapters on edema and cardiac failure.

The authors are to be complimented, and the book is to be highly recommended not only to students but to teachers and practitioners as well.

(BOOK REVIEWS CONTINUED ON PAGE 282)

American Academy of General Practice

APPLICATION FOR MEMBERSHIP

Name in full..... M.D. Date.....

Office address City..... State.....

Residence address City..... State.....

Place and date of birth..... Citizenship.....

Premedical education: College or university.....

Date of graduation..... Degree.....

Medical education: Medical school.....

Date of graduation..... Degree.....

Internship: Hospital..... Date.....

Licensure: State..... Date.....

Graduate training following internship:
Institution..... Date.....

Residencies
or
fellowships.....

Teaching appointments.....

Have you been engaged in the active general practice of medicine for 3 years or more (including military service) and are you now so engaged?.....

Membership on hospital staffs (past and present): (Include offices held and membership on committees)

Member of following county and state medical societies:.....

Membership in other medical societies: (Include offices held and membership on committees)

References: (Three; preferably members of A. A. G. P.)

(Address).....

(Address).....

(Address).....

(Over)

Educational activities in the past three years:

1. Scientific meetings attended:

Approximate number of hours

County medical society meetings.....

Hospital (educational meetings only)

Conventions—State Med. Soc., A.M.A., and Others (Specify—giving dates):

2. Post graduate courses taken (Specify—giving dates):

3. Military record in World War I and/or II:

4. Contributions to medical literature (Use separate sheet if necessary.)

I am applying for active membership and enclose herewith my check in the amount of \$35.00 covering the \$10.00 initiation fee and \$15.00 for the first year's dues, and \$10.00 for state dues.

I understand that the money will be refunded if my application is not accepted. In submitting this application I hereby agree to abide by the Constitution and By-Laws of the American Academy of General Practice and to accept the Board of Directors as the sole and only judge of my qualifications to be and remain a member.

I certify that I do not limit my practice to a single specialty of medicine or surgery.

.....M.D.
(Signature of Applicant)

(For Committee on Credentials)

Approved for active membership ☐

Appointment not recommended ☐

Appointment deferred ☐

Enclose check and mail to:

DR. ROSCOE McMILLAN, Secretary
Red Springs, North Carolina

AUXILIARY

TWENTY-FIFTH ANNUAL MEETING, WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

The twenty-fifth annual meeting of the Woman's Auxiliary to the American Medical Association will be held in Chicago, June 21-25, with headquarters at the Hotel LaSalle.

A most cordial invitation is extended to all women who are Auxiliary members or guests of physicians attending the convention of the American Medical Association to participate in all social functions and attend the general sessions. Whether Auxiliary members or not, the wives of doctors will be most welcome.

Auxiliary headquarters will be on the mezzanine floor of the Hotel LaSalle. All meetings and functions will be held at the Hotel LaSalle unless otherwise stated in the program, or announced during the meeting. Please register early and obtain your badge and program of the social function.

All tickets should be purchased soon after arrival. These will be sold at the Auxiliary headquarters. All meetings and social affairs will begin at the time scheduled. Please be prompt.

Registration Hours

Sunday 2:00 p.m. to 4:00 p.m.
Monday 9:00 a.m. to 4:00 p.m.
Tuesday 9:00 a.m. to 4:00 p.m.
Wednesday 9:00 a.m. to 4:00 p.m.

PROGRAM

Monday, June 21, 1948

4:00 p.m. Tea in honor of Mrs. Eustace A. Allen, President and Mrs. Luther H. Kice, President-Elect, Woman's Auxiliary to the American Medical Association, Century Room
Tickets \$1.25. All doctors' wives cordially invited
Hostesses: Auxiliaries to the Illinois State Medical Society and to the Chicago Medical Society

Tuesday, June 22, 1948

9:00 a.m. Formal opening of the Twenty-fifth Annual Meeting of the Wo-

12:00 M.

man's Auxiliary to the American Medical Association, Illinois Room (mezzanine floor)

Luncheon in honor of the Past Presidents of the Woman's Auxiliary to the American Medical Association, Grand Ballroom (19th floor) Tickets \$3.50
Guest Speaker: Morris Fishbein, M.D., Editor, *Journal of the American Medical Association* and *Hygeia*.

2:00 p.m.

Afternoon session

8:00 p.m.

Opening Meeting of the American Medical Association, Grand Ballroom, Hotel Stevens. Members of the Woman's Auxiliary and guests are welcome.

Wednesday, June 23, 1948

9:00 a.m.

General Session of the Woman's Auxiliary to the American Medical Association, Illinois Room (mezzanine floor)

12:30 p.m.

Annual Luncheon in honor of Mrs. Eustace A. Allen, President and Mrs. Luther H. Kice, President-Elect, Grand Ballroom (19th floor) Tickets \$3.50

2:30 p.m.

Afternoon session

Thursday, June 24, 1948

6:30 p.m.

Annual Dinner of the Woman's Auxiliary for members, husbands and guests, Grand Ballroom (19th floor) Tickets \$4.00

9:00 p.m.

Reception and Ball in honor of the President of the American Medical Association—Palmer House

Friday, June 25, 1948

Exhibits at Navy Pier



For Shy, Nervous, Retarded Children



Year round private home and school for girls and boys of any age on pleasant 150 acre farm near Charlottesville.

Individual training and care, expert teachers. Limited enrollment, amusements, special diets, medical care if necessary. Entrance made at any time. Write for Booklet.

Mrs. J. Bascom Thompson, Principal

**THE THOMPSON
HOMESTEAD SCHOOL**

Free Union, Virginia



BOOK REVIEWS

(CONTINUED FROM PAGE 280)

Kompendium der Parasitischen Wuermer im Menschen. By Hans A. Kreis. 136 pages. Basel, Switzerland: Benno Schwabe & Co., 1947; imported by Grune & Stratton, Inc., New York.

Although the subject of parasitic helminths has been well covered in texts written in the English language, the present work is probably the most recent up-to-date book in German. A general section deals with parasitism; general morphology and biology of flukes, tapeworms and roundworms; the effects of these worms on the human host; general principles of therapy; and prophylaxis. Certain life histories are illustrated by diagrams. The second section of the book concerns diagnostic methods. General remarks on diagnosis are followed by considerations of serologic methods, complement fixation, precipitin and flocculation reactions, and intradermal tests. Examinations of stool, urine, sputum, blood, biopsy material, and the investigation of intermediate hosts are discussed. The author has presented useful keys for the identification of mature helminths, ova and larvae, accompanied by illustrations. Some of the illustrations of ova have been schematized, and are therefore possibly misleading.

In the third section of the book, the author treats six species of Trematoda (flukes), four species of Cestoda (tapeworms), and ten species of Nematoda (roundworms). Under each species he discusses geographic distribution, pathology, therapy, prophylaxis, and prognosis. This section is followed by a synopsis, listing the important synonyms of each species. Finally, certain important data are presented in tabular form, and the book is concluded by a short list of textbooks of helminthology.

The book can be recommended as a useful text, provided one has a knowledge of German and realizes that certain of the figures are schematic.

In Memoriam

WILSON PENDLETON, M.D.

Dr. Wilson Pendleton of Asheville, who died on Easter Sunday, was born at Portsmouth, Virginia, on February 22, 1886, and graduated in medicine at the University of Virginia in 1908. For some years he was on the staff of the Gaylord Farm Sanatorium at Wallingford, Connecticut. He was a captain in the Medical Corps during World War I and was stationed for two years at Camp Jackson, Columbia, South Carolina. From there he came to Asheville in 1919, where he was for several years associated with Drs. Minor and Ringer in tuberculosis work. For the last several years he devoted himself almost exclusively to allergy.

Dr. Pendleton was a member of the State Medical Society and of the American Medical Association; he was also a member of the American College of Chest Physicians and of the Southeastern Allergy Association. He was modest, shy, and self-effacing, one of the kindest of men, and very popular with his colleagues in Asheville.

"And thus he bore without abuse
The grand old name of 'gentleman';
Defamed by every charlatan
And soiled with all ignoble use."

Paul H. Ringer, M.D.

BULLETIN BOARD

(CONTINUED FROM PAGE 280)

AMERICAN HOSPITAL ASSOCIATION

Appointment of Charles T. Dolezal, M.D., superintendent of City Hospital of Cleveland, as assistant director and secretary of the Council on Professional Practice of the American Hospital Association, has been announced by George Bugbee, executive director. Dr. Dolezal assumed his new duties on May 1, filling the position left vacant with the resignation of Hugo V. Hullerman, M.D.

Dallas G. Sutton, M.D., Rear Admiral (MC) USN (Ret), director of study, Government Hospital Relations at the Washington Service Bureau, has been appointed in addition secretary of the Council on International Relations of the American Hospital Association.

PAN AMERICAN ASSOCIATION OF OPHTHALMOLOGY

Dr. Conrad Berens of New York was elected president of the Pan American Association of Ophthalmology at the Third Pan American Congress of Ophthalmology held in Havana, Cuba, January 4-10. It was decided to hold the next Congress in Mexico City in 1952.

The Congress adopted "statutes and bylaws," establishing the Pan American Association of Ophthalmology as a continuing organization with the objectives of fostering the progress of ophthalmology, establishing contacts among ophthalmologists of the Western Hemisphere, and promoting measures to conserve eyesight and prevent blindness among the peoples of the hemisphere.

ACADEMY-INTERNATIONAL OF MEDICINE

The Academy has for the first time compiled a comprehensive catalogue of surgical, medical and dental films, alphabetized both as to classification and titles, which will enable you to locate, select and secure pertinent films. It is limited in extent only by the number of films on which information was provided and contains a number of foreign films. In a section devoted to Audio-Visual Services are announcements of new developments and other data which might interest those who are building programs.

As a service to the profession the Academy is offering to mail, upon request, a complimentary catalogue to all A.M.A. officials, deans of medical schools, state secretaries, state program chairmen, authors of listed films and to certain foreign libraries. Copies will be provided to others, upon request, until the supply is exhausted.

Requests should be addressed to: Academy-International of Medicine, Department of Audio-Visual Aids, 214 West Sixth Street, Topeka, Kansas.

AMERICAN PHARMACEUTICAL MANUFACTURERS ASSOCIATION

Dr. Theodore G. Klumpp, president of Winthrop-Stearns Inc., was elected president of the American Pharmaceutical Manufacturers Association at its annual convention held in Havana, Cuba.

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CHANGING TRENDS IN MEDICINE

HENRY STUART WILLIS, M.D.*

McCain

This invitation provides me with an opportunity to discuss a matter long on my mind about certain trends now manifest in the profession of medicine. To introduce it I would like to tell you of two apparently unrelated incidents that have come to my observation. The first one concerns a recent contact with a medical family. The senior member was in his late eighties, and had been a general practitioner for fifty-five years prior to his retirement. I met him first a good many years ago, when he made a tremendous impression on me. He was physician to the community, adviser and confidant to those who sought his help, sane and sympathetic friend to many, father confessor to more than one would suppose. He was beloved of all. He was genial and informal; yet, out of reverence and respect, people tipped their hats to him as he walked down the street. He had meant so much to so many people over the years that they carried him in their hearts.

The junior in that medical family I met recently for the first time. He had followed his grandfather into medicine. It appears that he had been precocious; for, at the age of 32, he had been graduated from medical school, had had three years of hospital training, two years in the army, and three years in practice. He had been certified by his American Board. His office was modern and well equipped. His three years in practice had enabled him to build an expensive suburban home. He knew much more medi-

cine than his grandfather. But his grandfather had recently made a nocturnal call of mercy on an occasion when the younger man had declined because the patient was without funds.

The townspeople felt that this younger man was a good physician, but that his "no money, no service" attitude was unfortunate. Instead of doffing their hats to him when they meet him on the street, they greet him with "Hi, Doc! Got a tip on the races?"

The other circumstance which seems to point to a changing trend in medicine centers about a recent notice which stated that the American Medical Association had employed a public relations counsel. May one not ask why the American Medical Association ever felt the need of professional aid in its public relations—in other words, the need of help to sell the medical profession to the public? Have things come to a point where we, the members of a necessary profession, are respected for our ability but distrusted in many instances because we are cold to human need, have an itching palm, and show that we feel ourselves to be apart from the vital, vibrant, human element of our community and aloof from its sufferings, its needs, and its pleasures? Do you suppose that the American Medical Association of Grandfather's time needed to buy its way into the good graces of the public? Not on your life!

The public at that time accepted the doctor's word almost as law and gospel. But one cannot see that that situation was wholly good, either. The public has become better informed in health matters, more critical and exacting of its physicians as the years have gone by. And this is as it should be.

* Annual Lecture, Whitehead Honor Society, University of North Carolina School of Medicine. Delivered October 11, 1947.

* Superintendent, The North Carolina Sanatoria, McCain, North Carolina.

Some of the loyalty to Grandfather was placed there through ignorance, for the physicians of past times may have been long on personality and short on medical knowledge. One can hope now for a better blending of the two.

Medicine—which Lord Bryce once classified as the “only profession that labors incessantly to destroy the reason for its existence”—is in need of some renovation today. The profession which you are entering is facing serious problems and is trying earnestly to solve them. The situation possesses some good and some bad. Unfortunately, many of the leaders of organized medicine have shown a reactionary attitude toward the demand for change and have seen the bugaboo of so-called state medicine behind every tree. At the same time many liberal leaders in the profession are working effectively to bring organized medicine to a more realistic view of things.

Opportunities Offered by Medicine

In view of these changing trends in medicine, what are some of the opportunities and obligations which confront the young man just entering the profession? Medicine is at once an exact and an inexact science—exact because many scientific procedures have made it so, inexact because human evaluations and judgments do not fall in the range of the precisely measurable. It is at the same time both a science and an art. As science and art, it offers several opportunities to a young man.

First, it offers an *opportunity to make money*. Some enter the profession for this purpose. Some sons are urged into it by fathers who see it as a money-making venture. The training is long and expensive, the cost of a medical education being estimated now at about \$10,000. One must have an eye to recouping. Medicine provides a good living for most of its votaries, as indeed it should. Lawyers work at their profession and get rich (some of them). So do engineers and actors and politicians and businessmen. Although *some* doctors are motivated principally by financial considerations, it seems altogether unlikely that these are numerous. I make this statement for the simple reason that medicine is a hard master both in training and in practice—so hard, in fact, that the sustaining force must necessarily be a thoroughgoing interest in the

work. Unfortunately, however, financial success sometimes separates one from suffering and human need, and may contribute to indifference and coldness. Today, far too many people measure success in terms of the physical scale of living, and not by educational, spiritual, or moral standards.

In the second place, medicine carries with it good *social position*. The doctor and his family practically always enjoy contact with the leaders of the community.

Thirdly, medicine offers one an *opportunity or a call to leadership*. The physician is brought into contact with humanity at its worst and at its best. He sees human frailties and the results of the exercise of human capacities, good and bad. When people make him their confessor, when they expose their weaknesses or show their fortitude and strength of character, they do so because they trust him. He must be loyal to that trust. He comes to know psychology and he builds a philosophy of life. The knowledge he gains of mankind gradually ripens—or may ripen—into wisdom. The distinction between knowledge and wisdom has been clearly stated by Cowper:

Knowledge and wisdom, far from being one,
Have oft-times no connexion. Knowledge dwells
In heads replete with thoughts of other men;
Wisdom in minds attentive to their own.
Knowledge is proud that he has learned so much;
Wisdom is humble that he knows no more.

It is altogether likely that our profession affords its members a greater opportunity for the acquisition of both knowledge and wisdom than does any other. In many instances the people recognize that the physician is a wise man, and instinctively turn to him for leadership.

Next, medicine provides an opportunity to exercise our ingenuity and initiative, an *opportunity to learn*, to explore and probe, to find out new facts and thus to contribute to the sum total of medical knowledge. Someone has said that a person who probes the unknown—who does research—is the true believer, with faith that truth lies back there behind our ignorance, awaiting discovery; and that he who hedges himself about with unsupported dogmas and beliefs is, in fact, the agnostic. As Tennyson put it,

There lives more faith in honest doubt,
Believe me, than in half the creeds.

For many of us the best reward offered by medicine is the *opportunity to help people who are sick*. A great deal of sentiment has

been built up about the beautiful way in which doctors sacrifice themselves for others (usually for pay). Sentiment aside, the profession of medicine provides one with the best chance of all to use his knowledge in a practical way to help the world. This opportunity enables him to look upon his work and realize an inner satisfaction (not pride), and a degree of happiness which never comes by direct seeking but only and always as a by-product of a busy and useful life.

Finally, medicine provides an opportunity—if we may call it such—of growing stale and outmoded, of stagnating or vegetating, and of becoming a slave to mere routine. Medicine is moving forward and he who is unwilling to keep pace and to continue to learn is soon hopelessly lost.

The Qualifications of a Good Physician

It is a truism to say that opportunities carry corresponding obligations. In the medical profession these obligations are satisfied to the degree that the physician is equipped with knowledge requisite to holding the lives of people in his care and with the character essential to doing this job.

What are the qualities of the good physician? What does the profession, the master, require of us? All of us had certain ideas—some of us ideals—when we undertook this long six-, seven- or eight-year grind of preparation. What were they, and how do they fare as we go along the way? Some of us enter the profession to make money; many more have simple but genuine interest in the subject. Some see in it an opportunity to help improve the health of the people. Others may have a penchant for investigation and may see in medicine a vehicle for these endeavors. Whatever the motive, there are a few indispensable prerequisites to one who would follow the God of healing.

The first of these is sheer *honesty*. In dealing with life and death and with the trust and confidence of people, naked honesty is truly the only successful policy. It is true that no one is likely to catch up with the man who treats the patient (for a fee) longer than he need be treated. No one but you will know whether a patient needs those visits for diathermy or ultraviolet irradiation, or treatments by the pretty gadgets that sooner or later come to clutter up so many of our offices. Your basic sense of honesty will stand the gaff if service and

quality of work be your primary interest. But if your *first* aim is money, then drop out of medicine and go into business, whose avowed purpose is profit. Save your place in the ranks for someone who, willing and glad to make all he can, holds money-making as distinctly subsidiary to the primary objective—namely, that of treating disease and relieving suffering.

It is difficult to see any promise of success in the medical profession for one who does not have an *interest in people*. To the physician, the day-by-day parade of people is a veritable kaleidoscope which reveals man in his work and his play, in his sadness and his joy, in his levity and his seriousness, in his generosity and his greed, in his foibles and his quirks that deviate to either side of normal. The doctor must know these people and he must love them if he would fully answer their pleas, for they will need from him sympathy and understanding as well as a cure for their physical ills. He must be able to salve when he cannot save. And, gentlemen, it is a fine art. It can be a noble art, and the doctor who masters it must have a genuine concern for people.

It follows from the above that he must have *open-mindedness*—"a liberated mind"—, tolerance that will not compromise with what is beyond the code; he must be receptive to change, but must have a set of principles as a guide line. His liberated mind may well embrace the advice of a few of the great figures in history—such as Socrates, who said "Know thyself"; Aurelius, who said "Control thyself"; and Jesus, who said "Give thyself."

The doctor must have *industry*. That the acquisition of medical knowledge requires work, you already know, as you know also that it takes effort, concentration, determination to sit it out no matter how hard the chair, stool, or bench. Remember that it is going to be that way all along. The doctor knows little about the forty-hour week. In practice you will be called at night (and in the daytime too, we hope). You will be called upon to keep up with the ever increasing flood of new knowledge during school days and later. But, believe me, after a while this effort gathers to itself much of pleasure for its master.

Lastly, the physician must have *character*. Someone has taken a cue from medical parlance and has said that our society, physi-

cians included, is in need of some of the social hormones. He would have us realize that "the thyroid extract of initiative, the pituitary secretion of civic virtue, the adrenal hormone of courage—are of transcendent importance to any nation . . ."

After the young physician has won his spurs and has established himself in practice, what will things be like? How will you be doing ten years after graduation? At your present age most of you still have your ideals. How well will these wear? The rewards will depend upon the philosophy of the man. A good many disappointments must be met out there; a good many adjustments will be called for. Will these be made without dangerous compromise? Not all our fellow physicians are possessed of ideals. When you see these people and their success, what will be your reaction? It takes character to do the job well.

The Present System of Medical Education

Trends in medicine today reflect the type of training we receive, and are in turn modified by this same training. Therefore let us consider, if we may, something of the character of the training we get, and endeavor to learn whether this contributes to the situation.

The history of medicine indicates that leadership shifted from France to England about one hundred and fifty years ago, and later moved gradually from England to Germany. About forty years ago that leadership came to the United States. We were prepared for it by virtue of an aggressive attitude on the part of the American Medical Association and other voluntary organizations which had created a virtual revolution in the educational system in medicine. In this overhaul approximately half of the medical schools in the country were forced to close their doors. Many of these were proprietary in character, inadequate in facilities and equipment. Most schools came to be identified with universities, and a number of them adopted the full-time system for at least a minimum of their teaching staff. Medical education took on more of an academic air, and at the same time it developed its clinical facilities more fully. Coincident with this development, and related closely to it was an increase in medical research. At present, instruction is on a high scientific plane at both preclinical and clinical levels.

Yet one can wonder about some of the features of this truly magnificent machine that is devoted to medical training in this country. One's first question might center upon the requirements for admission to medical schools.

The applicant's grades must be high—and it is easy to see the reason for this requirement. Yet in how far do grades determine a person's ability to learn and catalogue fact, to store it in his mind and recall it for practical use on need? How much does extensive emphasis on grades encourage the bookish fellow to tackle a profession which is eminently practical? I am certain that this question has plagued many a dean.

Most medical schools require recommendations and an interview with the prospective student. They also use aptitude tests, but apparently the schools are continually making efforts to determine something of the man's basic character, other than to learn the fact that he has not been in jail. We need additional measures of a man's fitness—an as yet undisclosed test of his temperament and character. The students size one another up fairly soon, and the few misfits are spotted. But what an advantage it would be if the admission of these could be avoided!

Before he can embark on his medical training the student must have completed extensive premedical work in the sciences. One would not ask that the student take less science for this preparation. But have you ever thought that science, which stresses demonstrated fact or truth, may become an intolerant master if unaccompanied by a balanced program or by insight? We properly think of truth and fact as basic in all our work. Yet it is easy for the scientist and the student to become dogmatic over facts as we know them at the moment, and to forget momentarily that the continuing scientific process shows much fact to be only relative truth. In fact, the student may well question any proposition in medicine when it begins to become sacrosanct. The medical student should be a devotee of revealed fact, and particularly of the continuing process of seeking new fact; but he should not let the devotion make him intolerant of areas in our life that depend upon unproved fact or circumstance and that have sheer thought and rationalization as their base. His life will be happier if he can see elements of

truth also in the "non-factual" philosophies of life.

For this reason one can only wish that the medical student could build up for himself some knowledge of history, literature, and even poetry; of religion and people's mores; of various fields of learning that are not measured by "demonstrated" scientific fact. Such a background will help him in his many future contacts with life, for out of it may come our most promising creative thinking and original research work. At times the science student's atmosphere is so devoid of other matter that he cannot have a "liberated mind." He will turn away in indifference, ridicule, or anger when literature, poetry, or religion is mentioned. What has happened to one when he cannot sit down and discuss such a non-scientific matter as, say, religion, in the manner that he might discuss a theory in pathology? Why cannot more of us have a mind which welcomes discussion (not necessarily acceptance) of poetry or religion on the basis of evaluation, by which all literature and history are tested?

Medical training demands appreciation of fact and application of it in a practical way. It must demonstrate to the student the physical, chemical, biologic, and psychosomatic bases of disease. As to the technique, some feel that our teaching is done too often by rote, too seldom by allowing the student to flounder a little while seeking facts for himself; too much by didactic technique and too little by the informal, Socratic method; too much by quizzes and examinations and too little by testing the student's ingenuity in solving theoretical and practical problems. Basically, however, modern medical training is sound—so sound that exceedingly few duds are graduated. If the student avails himself of all that the schools offer, he can scarcely become less than a skilled physician.

Conclusion

I close with the hope and belief that attention to certain of the non-scientific elements in our situation, as well as to the scientific, will aid in raising up a new generation of medical men who can recapture and glorify the fine heritage of the older physician without losing an iota of the modern scientific knowledge so laboriously obtained. May you never be satisfied, surfeited with success, for that state breeds deterioration and apathy; nor dissatisfied, for dissatisfaction is fellow

to discontent and unhappiness; but may you attain and continue in a state of *unsatisfaction*, knowing that there is still and always will be something to do before the big job is completed. May you have Grandfather's art and Grandfather's heart along with your science. May your reward be the inner satisfaction of a job well done, the accumulation of money within bounds, and the deep affection, gratitude and high regard of your fellow citizens.

A PROGRAM OF POST-LOBOTOMY RE-EDUCATION AND REHABILITATION

JOSEPH A. FARMER, M.D.

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Prefrontal lobotomy may now be viewed as an established adjunct in the armamentarium of psychiatric treatment. With the accumulation of experience, many workers are stressing the need for more frequent consideration of this surgical procedure when other methods fail, or in cases where specific positive indications are present⁽¹⁾. That a great deal of emotional thinking is being done about this topic is reflected in the extravagant claims made by its proponents, and in the uniform condemnation by its opponents of its use under any circumstances⁽²⁾. With further observation and study, a true evaluation of the role of this type of therapy in psychiatry will probably be found to lie somewhere between these two extremes.

While no adequate theory of the mode of action of prefrontal lobotomy has yet been propounded, there is abundant evidence that, following its use, many patients are able to resume a full and satisfactory life^(1,3). On

From The Institute of Living, Hartford, Connecticut.

Read before the North Carolina Neuropsychiatric Association, State Hospital at Butner, Creedmore, North Carolina, October 31, 1947.

1. (a) Freeman, W. and Watts, J. W.: *Psycho-Surgery*, in Spiegel, E. A.: *Progress in Neurology and Psychiatry*, New York, Grune and Stratton, 1946, vol. I, pp. 649-661; (b) Rees, T. P.: *Indications for Prefrontal Leucotomy*, *J. Ment. Sc.* 89:161-164 (April) 1943; (c) Walker, A. E.: *Psychosurgery; Collective Review*, *Internat. Abst. Surgery* 78:1-11, 1944; in *Surg., Gynec. & Obst.* (Jan.) 1944.
2. Freeman, W. and Watts, J. W.: *Psychosurgery*, in Spiegel, E. A.: *Progress in Neurology and Psychiatry*, New York, Grune and Stratton, 1947, vol. 2, pp. 461-472.
3. (a) Ziegler, L. H.: *Bilateral Prefrontal Lobotomy*; *Survey, Am. J. Psychiat.* 100:178-179 (Sept.) 1943; (b) Berliner, F., Beveridge, R. L., Mayer-Gross, W. and Moore, J. N. P.: *Prefrontal Leucotomy*; *Report on 100 Cases*, *Lancet* 2:325-328 (Sept. 15) 1945; (c) Hofstatter, L., Busch, A. K., Clancy, J. F., and Smolik, E. A.: *The Results of Surgical Treatment in 100 Cases of Chronic Mental Illness*, *South. M. J.* 38:604-607 (Sept.) 1945; (d) *Prefrontal Leucotomy: A Report on 1000 Cases*, *British Board of Control, Lancet* 1:265-266 (Feb. 15) 1947.

the other hand, the response of some patients leaves much to be desired, and there are a few whose condition postoperatively is less satisfactory than it was at the height of their illness⁽⁴⁾. The outcome undoubtedly depends on a whole complex of factors, of which premorbid personality, diagnostic classification, length of illness, and specific topography of the frontal sections are obvious. The quality of postoperative care, the therapeutic atmosphere fostered, the guidance, and the rehabilitation procedures employed are also significant, however. These may indeed spell the difference between the success and failure of the operation.

Characteristics of the Post-Lobotomy Personality

Nowhere, perhaps, may the value of consistent, graduated, properly directed activities be more pointedly exemplified than in the post-lobotomy situation, where the patient has been set abruptly adrift from familiar established landmarks, and floats aimlessly, as it were, on the sea of regression. Although certain individual reactions color the picture, the general configuration is sufficiently unique to justify the term, "post-lobotomy personality"⁽⁵⁾.

The majority of patients show inertia, listlessness, and reduction of affect, initiative and interest. Others are hyperactive, irritable, uninhibited, and euphoric. There may be episodes of sham rage. Behavior bears an immature, childish stamp. There are, for example, direct, childlike, affectionate attentions to associates. Time means nothing to the patient, and his needs and pleasures are immediate and elementary. Tactlessness, impulsiveness, ready complacency add to the incongruous spectacle. With self-consciousness and regard for social proprieties thrown overboard, he may engage in open masturbation, oblivious of the presence of others. The problem of sphincter control adds but a minor note to the whole scrambled discord.

The immediate postoperative display is, in effect, asocial behavior of a rather primitive modality. It is fundamentally amorphous and fluid, however, and the climate to which it is exposed has much to do with facilitating its involution or perpetuating some, at least, of its chaotic elements. It is apparently not so much shallowness of affect as loss of affect which tends to compromise the end-result^(2,6). The reduction of emotional tone to a range both narrow and shallow makes for the dissociation of the crippling affect states which have encapsulated the various components of the illness.

With adequate rechannelization of those affective elements which remain, the patient may often be brought to a level of adjustability consistent with satisfactory living. Sometimes one observes formerly aggressive and combative patients submit to attacks without retaliation, with the comment that the assailant was "upset and did not intend any harm." Some patients are reported to have undergone severe occupational, financial and physical traumas without emotional disturbance^(5a,6). Thus, while affect may not be entirely appropriate, it can at least be consonant with subjective comfort and objective tolerance.

The re-educational possibilities inherent in the post-lobotomy personality, compounded as it usually is of increased responsiveness to immediate stimuli and reduced affectivity, together with some patterns from the basic pre-psychotic personality and some residual symptoms of the illness, should be exploited to the maximum in the weeks and months that follow operation^(1a,3b,5a,7). The external environment is of tremendous importance to the patient, with his concrete way of thinking, his decreased span of attention, and his susceptibility to external influences^(4,5a,b,8). Changes in behavior must therefore be effected by the pressure of external circumstances, with adequate consideration of the problem of motivation^(4,5b).

1. Hutton, E. L.: Contra-Indications for Leucotomy; Whom Not to Leucotomize, *J. Ment. Sc.* 93:333-341 (April) 1947.
5. (a) Freeman, W. and Watts, J. W.: Prefrontal Lobotomy; Convalescent Care and Aids to Rehabilitation, *Am. J. Psychiat.* 99:798-806 (May) 1943; (b) Stevens, H. and Mosovich, A.: Clinical and EEG Investigation of Prefrontal Lobotomy Patients, *Am. J. Psychiat.* 104:73-80 (Aug.) 1947; (c) Freeman, W. and Watts, J. W.: Psychosurgery, Springfield, Ill., Charles C. Thomas, 1942, p. 337; (d) Sargent, W. W. and Slater, E. T. O.: An Introduction to Somatic Methods of Treatment in Psychiatry, Baltimore, The Williams and Wilkins Co., 1946, p. 143.

6. Freeman, W. and Watts, J. W.: Prefrontal Lobotomy; Survey of 331 Cases, *Am. J. M. Sc.* 211:1-8 (Jan.) 1946.
7. (a) Strecker, E. A., Palmer, H. D., and Grant, F. C.: Study of Frontal Lobotomy; Neurosurgical and Psychiatric Features and Results in 22 Cases with Detailed Report on 5 Chronic Schizophrenics, *Am. J. Psychiat.* 98:524-532 (Jan.) 1942; (b) Hutton, E. L.: Investigation of Personality in Patients Treated by Prefrontal Leucotomy, *J. Ment. Sc.* 88:275-281 (April) 1942; (c) Sargent, W. and Slater, E. (5d), p. 147.
8. (a) Rylander, G., and Sjöquist, O.: Frontal Lobotomi Vid Psykiska Sjukdomstillstånd, *Nord. med.* 29:557-571 (March 15) 1946 (summary in English); (b) Robinson, M. F.: What Price Lobotomy? *J. Abnorm. & Social Psychol.* 41: 421-436 (Oct.) 1946.

In view of their shortened span of attention, these patients need frequent reminders to return to the task before them. During meals, for instance, one patient needed constant reminders to continue eating. Here the feeding anomaly was a phase in the patient's regression to an individual pattern of infantile behavior; though he would chew his food, he would hold it in his mouth for long periods without swallowing—a habit with which his parents had also had to contend in his early childhood. Another phenomenon noted during meals is the tendency to mix all foods together and to eat all varieties with whatever utensil comes first to hand.

Rehabilitation Following Lobotomy

It is appropriate, then, in the lobotomy patient, to slant treatment along "direct" lines, with special reference to environmental manipulation and habit training^(3b,4,-5a,b,7b,9). Guidance must be firm and consistent, with emphasis upon constant occupation in constructive individual activities or in group situations directed toward the establishment of better habits of socialization. The rehabilitation effort should be initiated at once, before undesirable patterns of reaction have become set.

Some patients are content to be constantly idle, actively resisting efforts to engage their interest and participation in any activity, or even to obtain a change in their position. Once activity has been initiated, they may respond quite satisfactorily, successfully performing many things with surprising skill and coordination. However, once they are again physically at rest, much effort is required to reactivate them. Most patients need and will tolerate constant prodding and urging; their threshold of irritability is high. On the other hand, some respond favorably with moderate urging but will exhibit marked resentment, together with violent and abusive reactions, if the stimulation is continued—a signal of lowered threshold of irritability. Efforts during the period of retraining must be guided and modified by this variation in response.

It is our feeling that rehabilitation of lobotomy patients may be based on a few primary principles: (1) There must be a well-rounded, full-time program, flexible

enough to meet individual needs. (2) There must be persistent urging, directing of attention, and stimulating of interest in individual and group activities. (3) Pressure must be exerted to the degree of individual tolerance short of eliciting an explosive reaction, although this is often impossible to avoid.

The second and third principles, in adequate balance, are extremely important to the success of the treatment. Inadequate interest or excessive irritability are commonly displayed, and if these characteristics are allowed to become fixed they may seriously diminish chances for a favorable outcome. We therefore make every effort to break up these patterns when they occur. With proper emphasis, much can be accomplished in the direction of increased energy and interest, as well as in the diminution of restlessness, irritability, and socially unacceptable behavior.

A Specific Program of Re-Education

Our efforts toward rehabilitation of the post-lobotomy patient have been primarily directed toward the goals of vocational, avocational, social and recreational, and physical education, in an attempt to prepare this radically changed individual for a satisfactory social, and, if possible, occupational adjustment. Until recently these patients were included in the general program of activities carried out for all patients in The Institute of Living by the Department of Educational Therapy. Experience has indicated the need for a more specialized program directly suited to the needs of lobotomy patients, and we have recently begun a separate schedule of activities for this group which extends throughout the day (table 1).

All personnel working with these patients are given instruction concerning the particular reactions involved and an understanding of desired goals, so that guidance is maintained toward the reestablishment of effective patterns of behavior.

We are at present in the process of further modification in this program and further division of groups according to general behavior and ability to cooperate with others. We routinely "advance" each individual to more convalescent groups where his residence, associates, and caliber of activities are on a more complex level; and as

9. Watts, J. W. and Freeman, W.: Intelligence Following Prefrontal Lobotomy in Obsessive Tension States. *Proc., Philadelphia Neurological Soc., Arch. Neurol. & Psychiat.* 53:244-245 (March) 1945.

Table 1
Weekly Schedule of Activities for Post-Lobotomy Patients

Sunday		Monday		Tuesday		Wednesday	
Women & Men		Women	Men	Women	Men	Women	Men
9:00	Mass	Cooking	Individual activities*	Personal achievement, one hour each by individual appointment	Individual activities*	Individual activities*	Individual activities*
10:00		Cooking	Physiotherapy		Physiotherapy		Physiotherapy
11:00			Swimming and squash		Swimming and squash	General hospital movie	Swimming and squash
12:00		Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
2:00		Social Hour		Social Hour		Social Hour	
3:00	Protestant service	Typewriting		Clay Modelling		Typewriting	
4:00		Physical Education		Physical Education		Physical Education	
7:30 to 9:00		General Hospital Dance					
Thursday		Friday		Saturday			
Women		Men	Women	Men	Women	Men	
9:00	Individual activities*	Individual activities*		Individual activities*		Individual activities*	
10:00		Physiotherapy	Individual activities*	Physiotherapy	Individual activities*	Physiotherapy	
11:00	Costume design	Swimming and squash		Swimming and squash		Swimming and squash	
12:00	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	
2:00	Social Hour		Social Hour				
3:00	Arts and Crafts		Hobby Shop				
4:00	Physical Education		Physical Education				
7:30 to 9:00			Current Events				

*Individual Activities

- | | |
|---|--|
| <p>I. Motor tours</p> <ol style="list-style-type: none"> Two-hour rides three times weekly Picnics at the shore or lake Mohawk trail <p>II. University extension courses</p> <ol style="list-style-type: none"> English grammar French literature Beginning Spanish Bookkeeping and accounting | <ol style="list-style-type: none"> Beginning shorthand and typewriting Business management Junior business training Operation of a small retail business Mechanical drawing Photography Sketching Dancing Private cooking |
|---|--|

soon as a patient evidences sufficient reduction of symptoms and an adequate sense of personal responsibility, plans are made with the family so that a definite job appropriate to his resources is available for him immediately upon discharge.

Post-Lobotomy Prognosis

Behavior changes may be relatively consistent, altering only gradually with the passage of time, or they may show marked fluctuations from day to day or over a period of months. As a rule, however, reablement,

when it occurs, follows a pattern of continuity^(1,2). With the reduction of affective and ideational correlations comes a progressive abatement of somatic complaints. Delusions and hallucinations start losing their force, and the motor components of behavior, the mannerisms and stereotypies, are gradually modified and even lost.

Some of our patients have achieved a satisfactory social and occupational adjustment after three months. Admitting individual variations, however, it is generally agreed that six months must elapse after operation before one can evaluate results with any degree of certainty⁽¹⁰⁾. Significant progress may be obtained for at least a year. On the other hand, signs of immaturity may linger on, and in the experience of some workers, effective social adaptation may not be completed until three to five years after operation⁽³⁾.

With the improvement and refining of techniques for retraining and re-education, a more accelerated, satisfactory progression to acceptable social and occupational performance may be envisaged. As experience accumulates in the realm of lobotomy, the importance of consistent postoperative stimulation in the comprehensive psychiatric program indicated for these patients becomes increasingly clear.

Conclusions

Prefrontal lobotomy is an adjunct rather than a self-sufficient therapeutic agent; it should never be employed to the exclusion of a comprehensive psychiatric program. Indeed, one of the basic justifications of lobotomy has been that it lowers resistance to other forms of therapy^(1,11). We believe, therefore, in a holistic approach; and we attempt to offer a direct form of therapy, introducing external factors, motivations, and social forces intended to promote reintegration of the post-lobotomy personality and the achievement of emotional maturity and of harmonious spontaneous reactions in ordinary social relationships.

We propose that a special program of re-

education and retraining be employed, with a view to obtaining the most benefit possible from prefrontal lobotomy. It is our belief that this plan and objective can best be realized, for a definitely indicated period, in the controlled environment of a hospital and with specially trained personnel. A premature return to the family, with its perhaps etiologically significant conflicts, tensions and over-solicitousness, and with its incapacity for adequate emotional adjustment to the many problems usually present for some time postoperatively, may make it impossible to realize fully the potentials inherent in the post-lobotomy personality.

A TECHNIQUE TO REDUCE BLOOD LOSS DURING CESAREAN SECTION

FRED M. DULA, M.D.

LENOIR

Various methods have been devised to decrease the amount of blood lost during cesarean section. These vary from the application of multiple clamps along the edges of the uterine wound to the application of manual pressure over the lateral aspects of the lower uterine segment.

Every surgeon is familiar with the disadvantages of present methods, and dreads the hemorrhage which is attendant upon all these methods. For this reason he hastens the process of delivering the child, so that he may begin at the earliest moment to secure hemostasis. Only too often transfusion is necessary because of the emergency created by the uncontrollable blood loss.

A very simple procedure which we have used is effective in controlling hemorrhage, and has the great advantages that it can be speedily accomplished and that it leaves the operative field uncluttered by instruments or assistants' hands.

This method employs Mayo-Robson intestinal clamps, the lower thirds of which are covered with soft rubber tubing. The tubing serves to protect the thinner, more vulnerable lower uterine segment from injury, and to apply a more even pressure along the whole course of the incision than would otherwise be possible; the thickness of the covered portion of the forceps makes up for

From the Dula Hospital, Lenoir, North Carolina.

10. Brody, E. B. and Moore, B. E.: Prefrontal Lobotomy; A Review of Recent Literature. Connecticut M. J. 10:409-421 (May) 1946.

11. (a) Kisker, G. W.: Behavioral Sequelae of Neurosurgical Therapy (Bilateral Prefrontal Lobotomy). J. Gen. Psychol. 33:171-192 (Oct.) 1945; (b) Dax, E., Smith, C. R. and Radley, E. J.: Early Effects of Prefrontal Leucomy on Disturbed Patients with Mental Illness of Long Duration. J. Ment. Sc. 89:182-185 (April) 1943.

the thinness of the uterine wall in its lower aspect.

Description of Technique

A routine midline or right or left paramedian incision is made. The uterus is not delivered through the wound, nor is packing necessary to protect the peritoneal cavity from spillage. Palpation of the uterus will reveal the site of the placenta. A vertical incision is made through the uterine wall near its fundus and over that area where there is no placental attachment. This incision need not be more than one inch in length, and should be carried carefully through the wall into the uterine cavity.

Through this incision are introduced downward and one at a time the two intestinal clamps, with the convexity laterad. Bandage scissors are then used to complete the incision downward between the clamps. These clamps are left *in situ* until delivery of the placenta has been accomplished.

Immediately after delivery of the child, pituitrin is injected into the uterine wall. Upon delivery of the placenta and removal of all placental debris, the clamps are removed and the uterine wall is repaired in the routine manner. Very little oozing of blood from the uterine incision will occur.

This method obviates the extreme urgency for speed in cesarean section and replaces apprehension with confidence. Aside from the blood loss occurring as a result of placental detachment, little more blood will be lost during such a procedure than during the average hysterectomy.

Conclusion

A technique to reduce hemorrhage in cesarean section and to expedite the performance of this operation has been described. No special equipment is required which will not be found in the usual surgical armamentarium.

Psychosomatic medicine is medicine itself. The role of humanist cannot be assigned to any one group, whether its members be called psychiatrists, psychosomaticists, or priests. The study of man and his values is at least as much a part of internal medicine as physiology, chemistry, or anatomy. Fundamental concepts which involve or modify our understanding of all disease can never be regarded as clinical specialties.—David P. Barr: *The Responsibilities of the Internist*, Ann. Int. Med. 27:200 (Aug.) 1947.

A BACCALAUREATE SERMON FOR A CLASS GRADUATING IN MEDICINE

GEORGE D. HEATON, D.D.

CHARLOTTE

Text: Hebrews 2

The only fair reciprocation for this experience would be for a member of the medical profession to be invited to deliver the baccalaureate sermon to a graduating class of young ministers. I am restrained in what I shall say to you today because I shudder to think what a physician might say to young men going into the ministry. I am sure that he would employ caustic words of denunciation for the manner in which ministers have prolonged convalescence by visitations which exhausted the patient; and I hear him defying the wrath of the ministry as he pleads for the abandonment of religious attitudes which cause functional illnesses as surely as germs cause infections. Unfortunately, I am in no position to invite you to speak to a graduating class of young ministers, as badly as they need it. I can only ask you to bear with me this morning as though I were in a position to reciprocate this generous invitation.

The Relationship between Physician and Clergyman

The present professional courtesy between ministers and men of medicine is on the verge of disintegration. That professional courtesy was delightful and gracious. The whole community applauded it and supported it with a widely accepted philosophy of the role of medicine and religion. The people would look at the doctor and say, "He takes care of our bodies." They would then look at the minister and say, "He takes care of our souls." On Sunday morning in the typical town, the practitioner on bodies makes his calls, and the practitioner on souls preaches his sermon. There was a touching reciprocity as the surgeon operated on the minister's wife and the minister performed the wedding ceremony for the surgeon's daughter.

There is not a man in this graduating class who does not know—or ought to know—that this old relationship, based upon a false compartmentalization, is something

Baccalaureate sermon delivered to the graduating class of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, December 14, 1947.

which must pass and is already on the way out. There is today a new relationship between minister and physician which means better health of body and soul to the peoples of the world. You know as well as I that persons are not body, mind, and soul in neat little compartments. You and I both know that unhealthy emotional disturbances make for sick bodies, and organically ill bodies bring to pass sick souls. There must be a new rapport between religion and medicine. The symbol of that rapport must be the close relationship of physician and clergyman.

A philosophy for this concept has been simply and effectively expressed in one of the earliest sermons of the Christian church. Part of that sermon you heard this morning, and one sentence of it ought never to be forgotten by any one of you. It was this: "We do not yet see all things controlled by man; what we do see is Jesus." The basic idea of that statement is that it is the plan and purpose of God that things shall be controlled by man. The implication is very obvious that things shall be controlled by man only when man becomes in himself the kind of person who can control things, and when he looks upon things with such truth that he can bring them under control. You know as well as I that functional diseases will never be brought under control by organic treatment. We all are aware that there are vast areas of life which continually threaten us with destruction if we do not bring them under control. The personality which can most effectively accomplish this end is the personality which understands life in the light of the integrating influence of Jesus Christ, and which derives its hope for ultimate control by man from the knowledge of what Jesus Christ can do for a single man, has done for all society, and is yet seeking to do through men in the future.

Specifically, we do not yet see all things controlled by man in the realm of good health. Some things that were once the scourge of the human race have been brought so completely under control that there is no excuse for a single fatality from such diseases. At the same time, there are new frontiers in which the battle has, to this time, been lost. We must give ourselves unceasingly to the task of bringing those frontiers under control.

The supreme opportunity of the moment

is with the man who is entering the field of medicine. There is a frontier of discoverable truths in the realm of medicine which does not exist in any other field. I do not know of a group of men who have the potentialities for revolutionary pioneering which your profession enjoys. The man who measures up must be a man who understands the nature of himself and the nature of the frontier which beckons him.

The Christian Philosophy of Vocation

If the new members of the medical profession are to fulfil the destiny which is before them, there must certainly be a revival of a sense of religious vocation. The Christian philosophy of vocation is very simple; a man is born with a certain inheritance determined by the types of genes which make up his personality, and within the many potentialities of that inheritance there is one vocation which best utilizes all of the abilities and capacities of the personality. When a man discovers that which best integrates all of his resources in one task, then he has found his calling. Now a man can interpret that calling in a secular way or in a Christian way; he can feel that he is qualified for medicine only by a chance arrangement of his atomic structure, or he can feel that he is qualified for medicine because of a Divine purpose to be fulfilled in his life.

If medicine be nothing more than the treatment of organic conditions which can be measured in laboratory procedures, then a secularist is as well qualified for a medical career as a religious man. If, however, conditions of sound physical health are determined by more than the conquest of organic disease, then that man who has a religious concept of his vocation is inherently qualified for the treatment of disease in a way superior to the man who does not. If life can be reduced to test-tube analysis, then the mechanistic man of medicine is competent and needs nothing else. If there are forces at work which determine physical responses and which are not measurable in the test tube nor in laboratory procedures, then the physician must be acquainted with the factors which influence those forces. You see, it makes a great difference in the actual practice of medicine how a man feels about his call into the profession.

Now certainly the object of such vocational calling is that we shall bring all things

under the control of man. This appears to be the inherent purpose of the Creative Power. That purpose is well revealed in the orderly processes whereby, in obedience to physical and moral laws, events and experiences run their courses. If there were no physical laws upon which our chemistry could be built, then we might well believe that it would be impossible for things to be brought under the control of man. When we see the nature of the physical universe, however, we become convinced that it is written in the character of things that they can be understood and brought under the control of him who understands them. And that which is true in the physical realm is equally true in the moral and the religious realm. Since we live in such an orderly environment, it therefore becomes the object of vocation that we should add to the control which man exercises over things.

As a man stands before the vast areas of life which have not yet been mastered, he is heartened by one vision. He sees standing there the eternal Christ, who in Himself represented the conquest over things and who gave the vision of the Kingdom in which all things should become conquered. The man who is most adequate for the career of conquest in the field of medicine is the man who, in intimacy with that eternal Christ, becomes possessed of understanding and discernment which bring under mastery those things that cannot be controlled by laboratory processes. He is the great physician who knows well the Great Physician.

Potentialities in the Field of Medicine

Each one of you has the heritage of a great profession, and ought always to stand in reverence when he recognizes the present moment in which he lives as the accumulation of all the labors and discoveries of the past. This present moment in the medical profession is the result of Pasteur, Lister, Koch, Harvey, Osler, Kelly, and a host that we have not time to name. But our reverence for the present is not due entirely to the fact that we are the result of all that has gone before. It is heightened by the reality that in this present moment are the potentialities of all that may ever yet be discovered in the field of medicine. That is why this moment should cause each man to bow in reverence and stand in awe, for this moment has wrapped up within it the possi-

bilities of all that may ever yet be done in medicine.

When a man recognizes that he has such a heritage in his vocation, he is confronted by the reality of overwhelming duty. Whenever it is possible for a man to alter the course of events, there and then that man has an inescapable duty. The worst vice of man is to have available for himself truth which would enable him to alter the course of events, and then to remain ignorant of that truth. No sin of your profession and mine is greater than the sin of being ignorant of that which is true and which might change the destiny of human lives.

Your profession has moved in a mighty way in controlling the course of events of human history. Causes of plagues have been removed. Scourges that harassed the human race have been wiped out. Proudly you ought to stand in the history of such a heritage, and humbly you ought to face the future.

In the field of organic disease

Obviously, the greatness of medicine in the past has been in the organic field. Since these are the diseases that so often kill, your conquest of them has made us all debtors to you. Within the span of the last half century, typhoid, typhus, smallpox, malaria, influenza, and other deadly diseases have been successfully challenged by your resources. These things we see under the control of man.

As we look ahead, it is to be hoped that other diseases of an organic nature will soon be conquered. How long the struggle will last no one can predict, but it is heartening to see the mobilization, in research and practice, of the energies of the medical profession to the end that these killing diseases might be overcome. You join that unnumbered group of pioneers who, by the tedious way of daily practice or laboratory pursuit, keep hope alive in human hearts. The world stands in awe before the possibilities of your consecrated brains and skills.

In the field of psychosomatic medicine

But you know as well as I that the conquest of these organic diseases is no more than half of your work. In the extremes of functional diseases, we discover that more than half of the hospital beds of this country are occupied by those who are mentally ill. In the vast work of a government like New York State, one fourth of all its budget

is spent upon the care of the mentally ill. The information which has come to us from the War Department indicates that mental illness took a terrific toll of manpower during this last calamity.

But we are not thinking of such extremes. We are thinking of those patients who come to the average doctor and who represent functional disorders rather than organic diseases. Dr. Joseph T. Wearn of Cleveland, in a recent article in the *Journal of the American Medical Association*, indicated that at least five of every ten patients who consult physicians today prove to have no organic basis for their complaints. You and I know that their complaints are real; their illness is genuine. It is in the treatment of these patients that most of you will find your greatest frontier. The vistas of psychosomatic medicine are just opening up for most of the medical profession.

Of course, the principle of such medicine has been known for centuries. One recalls that the wise Socrates, when he returned from the Greek campaign in Thrace, chided the physicians of Athens for not realizing as the Thracians did that the body would not be cured without the mind. He said to them, "This is the reason why the cure of many diseases is unknown to the Physicians of Greece, because they are ignorant of the whole."

The time has come for the medical profession to abandon the hostility, which is actual or insinuated, between the organic field and the psychosomatic field, and to recognize that the patient must be treated as a whole. To the young man going into medicine today, I would say that no incantation of a priest of barbiturates can accomplish what the peace of mind brought to pass through prayer can do. It has been my privilege to work very closely with men of the medical profession in the treatment of functional disorders. I recall the woman who, operated on for a malignancy, has during the postoperative period of eighteen months been haunted by the fear of a recurrence. Her surgeon called me up and said, "I have just talked with this woman, and this is her self-diagnosis: 'I am choking to death on a ball of fear that is in my throat, and I cannot get it out.'" I have been working closely with that surgeon, who gave the assurance that at the present moment there is no discoverable evidence of return, and working to that

peace of mind which comes by courageous faith over one's circumstances. That woman's pulse has been brought down to its best point in all her medical history. At the same time, the ball of fear has been removed and the woman in terms of physical health is stronger than in her lifetime. The successful physician of tomorrow can no more dismiss the claims of religion upon the life of the patient, or upon his own life, than he could dismiss the claims of penicillin in the treatment of organic disease.

If I were going out into the practice of medicine today, I think that I would be more impressed by the possibility of aid to my patients in the treatment of functional diseases than by any other factor. Before the reality of backaches which surgery and orthopedic procedures did not relieve, I would stand unashamedly and seek the functional answer. There is no profession which can take the place of the medical profession in the treatment of such disorders. It cannot be left to the quackery of those who exploit the intuitions of people through so-called psychological clinics.

It is in this way that I believe that the medical profession will find its answer to the outcry against specialization. We cannot have sound medicine without the pediatrician, the radiologist, the gynecologist, or the orthopedist; but at the same time the human being cannot be treated as though he were all foot, or all gland, or all eye. When the specialist becomes adept in the recognition of functional illness and in its treatment, then that which the average patient hungers for will be met; and we shall not have lost anything in the treatment of organic disorders.

Conclusion

I say to you, very honestly, that it takes a whole man to treat the whole man. A rogue can follow the findings of the laboratory and make the proper diagnosis and treatment of an organic illness. He, at the same time, is helpless when he undertakes to treat the total person. If a man is to bring things under the control of men, then he in himself must be a man who has things under control. Before a human life ever brings under control all things, that person must be controlled and dominated by the Christ. In that Christ alone is the full

integration of all truth. No man ever becomes so smart that he possesses knowledge which enables him to dispense with the Christ of all truth. In the light of the task which you have, I say to you, very humbly and very sincerely, that your successful pursuit of the field of medicine depends in a large part upon the wholeheartedness with which you accept and pursue the way of life which is in Christ Jesus.

A REVIEW OF THE TREATMENT OF SUBACUTE BACTERIAL ENDOCARDITIS

With a Report of an Unusual Case

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Within the span of a decade the prognosis of many diseases formerly considered hopeless has altered unbelievably for the better. The progress which has resulted from the use of penicillin in the treatment of subacute bacterial endocarditis affords one of the most dramatic and heartening examples of this fact.

Treatment before the Era of Chemotherapy

The epidemiology and symptomatology of subacute bacterial endocarditis, and the various remedies which have been tried for it, have been exhaustively treated in several summarizing articles⁽¹⁾ and will not be reviewed here. Until the advent of chemotherapy all contributions to the literature dealing with this subject simply added to our knowledge of the disease and to the list of treatments which had been tried without success. So uniformly fatal and so refractory to all treatment had been the disease

that in cases of reported recovery the accuracy of the diagnosis was often subject to question. Having established the diagnosis of subacute bacterial endocarditis, the physician was compelled to offer the patient and his family a practically hopeless prognosis, and could resort only to symptomatic therapy.

Treatment with Sulfonamides

The hope aroused by the introduction of the sulfonamides was soon found to be unwarranted. The sulfonamides combined with fever or anticoagulant therapy increased the recovery rate very little. Willius⁽²⁾ cited the following figures from the literature:

Table 1

Treatment	No. Treated	No. Cures Claimed	Per Cent Cures Claimed
1. Spontaneous recovery	2596	25	1.0%
2. Sulfonamide compounds	489	21	4.0%
3. Chemotherapy combined with heparin	109	7	6.5%
4. Chemotherapy combined with hyperthermia	61	4	6.5%
5. Chemotherapy with intravenous typhoid vaccine.....	45	7	15.5%

Kelson in 1945^(1c) listed thirteen different methods of therapy, most of them including one of the sulfonamides, which had been tried with little or no success by various authors. He found only 68 recoveries reported from 1939 to 1944. Of 34 cases which he personally treated with a combination of heparin and a sulfonamide, 10 recovered.

Treatment with Penicillin

Penicillin aroused more hope than had the sulfonamides. At first, however, it seemed that once more this optimism had been groundless. Florey and Florey⁽³⁾ in 1943 reported the use of penicillin in the treatment of 1 case of subacute bacterial endocarditis due to *Streptococcus viridans*; there was temporary improvement, but relapse and death occurred after the drug was discontinued. Herrell in 1943⁽⁴⁾ and 1944⁽⁵⁾ reported 2 cases of subacute bacterial endocarditis not cured by penicillin in the doses

1. (a) White, P. D.: Heart Disease, ed. 3, New York, The Macmillan Co., 1944, pp. 356-370; (b) Scherf, D. and Boyd, L. J.: Cardiovascular Diseases, Philadelphia, J. B. Lippincott, 1947, pp. 90-96; (c) Kelson, S. R.: Observations on the Treatment of Subacute Bacterial (Streptococcal) Endocarditis since 1939, Ann. Int. Med. 22:75-96 (Jan.) 1945; (d) White, P. D., Mathews, M. W., and Evans, E.: Notes on the Treatment of Subacute Bacterial Endocarditis Encountered in 88 Cases at the Massachusetts General Hospital during the Six-Year Period 1939 to 1944 (Inclusive), Ann. Int. Med. 22:61-74 (Jan.) 1945; (e) Seabury, J. H.: Subacute Bacterial Endocarditis, Experiences during Past Decade, Arch. Int. Med. 79:1-21 (Jan.) 1947; (f) Kelson, S. R., and White, P. D.: Notes on 250 Cases of Subacute Bacterial (Streptococcal) Endocarditis Studied and Treated between 1927 and 1939, Ann. Int. Med. 22: 40-60 (Jan.) 1945.

2. Willius, F. A.: Subacute Bacterial Endocarditis; Signs, Course, Complications, Prognosis, Proc. Staff Meet., Mayo Clin. 19:613-615 (Dec. 27) 1944.

3. Florey, M. E. and Florey, H. W.: General and Local Administration of Penicillin, Lancet, 1:387-397 (March 27) 1943.

4. Herrell, W. E.: (a) Further Observations on the Clinical Use of Penicillin, Proc. Staff Meet., Mayo Clin. 18:65-76 (March 10) 1943; (b) Gramicidin and Penicillin, S. Clin. North America 23:1163-1176 (Aug.) 1943.

5. Herrell, W. E.: The Role of Penicillin in the Treatment of Bacterial Infections, South. M. J. 37:150-157 (March) 1944.

then available.

Penicillin appeared so ineffective initially in the dosage used that it was not even allocated by the National Research Council for treatment of subacute bacterial endocarditis. In 1944 Keefer⁽⁶⁾, in outlining the policy of the group, reported,

"Up to the present time 17 patients with bacterial endocarditis have been treated. There were 4 deaths (23 per cent). No appreciable effect on the course of the disease was noted in 10 of them (59 per cent). Three patients improved temporarily while under treatment, although 2 of these relapsed soon after treatment was discontinued. The amounts of penicillin used varied from 240,000 to 1,760,000 units over a period of from nine to twenty-six days. There is good evidence that some strains of organisms are slightly more susceptible to penicillin than others, and there is also evidence that the blood stream can be sterilized temporarily, at least in some cases. On the whole, however, the results in the few cases treated were disappointing."

Again in 1944, Keefer⁽⁶⁾ reported, "Of 55 cases treated with penicillin, only 3 were alive after one year of study."

After larger quantities of penicillin became available, the treatment of subacute bacterial endocarditis with this drug resulted in an increase in the reported percentage of recoveries. White and his co-workers⁽¹⁴⁾ in 1945 reported 9 cases treated between January, 1944, and September, 1944, with 200,000 units of penicillin daily for a period of three weeks. Six of these cases apparently remained cured after an admittedly short period of observation. Meads, Harris, and Finland⁽⁷⁾ in 1945 reported 9 cases of subacute bacterial endocarditis treated at the Boston City Hospital during 1944 with a dosage of 300,000 units daily for two weeks. Of these patients, 7 were well and free of infection after an observation period of one to eleven months. They noted no advantage in the use of heparin as an adjunct to the penicillin therapy.

In the light of these and other similar reports, more effective and "massive" doses of penicillin have been used subsequently with increasingly gratifying and well-substantiated results. Bloomfield and Halpern⁽⁸⁾ reported in December, 1945, 18 selected cases successfully treated. Seven of these had been followed from twelve to seventeen months, and the remaining 11 had been followed from three to eleven months. This series,

however, was limited to cases in which the strain of streptococcus was sensitive to a dilution of 0.1 unit of penicillin per cubic centimeter. All patients received a minimum of 160,000 to 200,000 units a day for at least two months. In 1 patient who was responding satisfactorily, the dosage was increased to 1,000,000 units every twenty-four hours and continued at this level for a little more than a month, until a total of 33,750,000 units had been given.

In March, 1946, Glaser and his associates⁽⁹⁾ reported the case of a 24-year-old woman with subacute bacterial endocarditis who was improved but whose culture was not rendered negative by a total of 167,000,000 units of penicillin, the dosage at times having been as high as 4,000,000 units in twenty-four hours. Inhibition of her organism *in vitro* was not obtained with less than 3.5 units of penicillin per cubic centimeter. In the same month Christie⁽¹⁰⁾ in England reported to the British Medical Research Council on 147 patients treated in fourteen different areas. This study had been initiated as a result of the favorable reports being received from the United States regarding the use of larger doses of penicillin for longer periods. He stated that until eighteen months previously only a few such patients had been treated, and these with discouraging results. Of the 147 patients included in this cooperative study, however, 81 were apparently cured and 50 died. More recently McMillan⁽¹¹⁾ reported 12 cases with 11 recoveries, Seabury⁽¹²⁾ 12 cases with 7 recoveries and Thill⁽¹²⁾ 22 cases with 15 recoveries.

It is still too early to evaluate recovery rates accurately because of the relatively brief time during which most of the adequately treated cases have been followed. Seabury⁽¹²⁾ in January, 1947, stated that the cases reported until then indicated that penicillin treatment would probably result in a recovery rate of 65 to 70 per cent. Even if many of these "recoveries" prove not to be permanent, this figure stands in dramatic contrast to the mortality of nearly 100 per

6. Keefer, C. S.: Discussion of papers on penicillin, J.A.M.A. 124:636-637 (March 4) 1944.

7. Meads, M., Harris, H. W. and Finland, M.: The Treatment of Bacterial Endocarditis with Penicillin, New England J. Med. 232:463-474 (April 26) 1945.

8. Bloomfield, A. L. and Halpern, R. M.: Penicillin Treatment of Subacute Bacterial Endocarditis, J.A.M.A. 129:1135-1141 (Dec. 22) 1945.

9. Glaser, R. J., Smith, R. O., Harford, C. G., Wood, W. B., Jr.: The Treatment of Bacterial Endocarditis with Penicillin, J. Lab. & Clin. Med. 31:291-312 (March) 1946.

10. Christie, R. V.: Penicillin in Subacute Bacterial Endocarditis, Lancet 1:369-371 (March 16) 1946; also Brit. M. J. 1:381-383 (March 16) 1946.

11. McMillan, R. L.: Subacute Bacterial (Streptococcus Viridans) Endocarditis Treated with Penicillin, Am. J. Med. 1:628-633 (Dec.) 1946.

12. Thill, C. J. and Meyer, O. O.: Experiences with Penicillin and Dicumarol in the Treatment of Subacute Bacterial Endocarditis, Am. J. M. Sc. 213:300-307 (March) 1947.

cent before the sulfonamides were available and to the very low recovery rate resulting from their use.

Warren⁽¹³⁾ in December, 1946, reviewed 48 reported cases of *acute* bacterial endocarditis, 7 of which recovered. He then added a case of his own due to *Streptococcus hemolyticus*, in which the infection was arrested by a total of 22,629,000 units of penicillin given over a period of seventy-two days. This case is of particular interest in reference to our case reported below because the organism in both instances was the *Str. hemolyticus*.

For several reasons we felt that our case should be classified as one of subacute bacterial endocarditis, due to the beta hemolytic *Streptococcus*. The prolonged course of the disease, the evidence of valvular damage, and even the subsequent cardiac decompensation are factors which led to the classification of this case as *subacute* rather than *acute* bacterial endocarditis. The beta hemolytic *Streptococcus* is not often the causative organism in subacute bacterial endocarditis, being reported by Seabury⁽¹⁴⁾ in only 1.9 per cent of a series of 105 cases. Seabury also reported that 8.2 per cent of his cases were apparently related to abortion or to the puerperium. It is of interest that our patient became ill following delivery.

Because of the difficulties encountered in the treatment of this case and because of the patient's eventual recovery after she had received amounts of penicillin larger than we had then found reported elsewhere, it was thought that a detailed report of the case would be of interest. Subsequently, there have appeared reports of cases in which still larger doses were given. Hagedorn and Scheifley⁽¹⁴⁾ from the Mayo Clinic reported the case of a patient who recovered after receiving 337,450,000 units. Christie⁽¹⁵⁾, in a summary report to the British Medical Research Council, mentioned the use of dosages as high as 40,000,000 units per day. Tumulty and Harvey⁽¹⁶⁾ from the Johns Hopkins Hospital reported 2 cases treated with massive doses of penicillin. One received 295,000,000 units and another 1,450,000,000 units—the

largest dosage we have encountered.

Case Report

A 26-year-old white, married textile-worker and housewife was admitted to the Charlotte Memorial Hospital on August 28, 1946, on the service of Dr. E. J. Wannamaker, with whom she was later seen in consultation.

Her family history revealed that her father had diabetes and her mother had had two stillbirths. The patient had had two full-term pregnancies. One of her children was born blind.

Her past history indicated that she had tonsillitis three times before the removal of her tonsils in 1943. From the age of 14 she had had recurrent episodes of mild "rheumatism," at times with fever and aching of her knees and ankles. She had never been sufficiently ill to seek hospital care, and the diagnosis of rheumatic fever was never definitely established. There had been no epistaxis during childhood.

The patient had subsequently been in good health until her second delivery on January 24, 1946. From this date she began to have a persistent, low-grade fever and frequent brief, profuse menstrual periods. She gradually became weaker. After one or two months, she began to have chills. In May, 1946, pain, redness and swelling developed at the base of the right second toe. These symptoms subsided in one week, only to be followed by the development of a similar condition in the right hand, lasting two or three weeks. During this time she had a severe episode of nocturnal coughing productive of some blood. The joint symptoms subsided, but chills and fever persisted. The patient was advised by her physician to enter the hospital, but refused to do so. She later became so ill that she did enter a hospital in another city for two weeks in June, 1946. She had no subsequent menorrhagia, but developed amenorrhea.

Following this hospitalization she remained at home, in bed much of the time, suffering from palpitation, anorexia, weakness, weight loss, and vague aching in her joints and chest, until the time of her admission to the Charlotte Memorial Hospital. It was estimated that she had lost 85 pounds since the onset of her illness, her weight having decreased from 200 to approximately 115.

On admission the oral temperature was 101.2 F., the pulse 130, respiration 32, and blood pressure 130 systolic, 80 diastolic. The patient was obviously ill, being emaciated, pale, and partially disoriented. The fundi were not then examined, but were later noted to be normal. A few rales were heard at the base of the right lung. The cardiac rate was regular and very rapid, and a harsh, grade 3 systolic murmur was heard over the entire precordium; no diastolic murmur was heard. The liver edge was just palpable and the spleen was enlarged. There was slight tenderness and limitation of motion in the knees, ankles, shoulders and the smaller joints of the hands, but no redness or swelling of any joint. No embolic phenomena were noted. Reflexes were normal. A gynecologic consultant later found the pelvic structures to be essentially normal and suggested that the amenorrhea was secondary to her severe illness and infection.

Laboratory studies revealed 9.8 Gm. of hemoglobin, 3,720,000 erythrocytes, and 4,450 leukocytes with 85 per cent polymorphonuclear cells (including 11 per cent nonsegmented cells), 14 per cent lymphocytes, and 1 per cent monocytes. In spite of several transfusions the anemia persisted throughout her hospitalization, and the white blood cell count was usually low or normal. The highest leukocyte count was 12,500, with 89 per cent polymorphonuclear cells

13. Warren, H. A.: Arrest of Acute Hemolytic Streptococcal Endocarditis with Penicillin Therapy, Illinois M. J. 90: 331-336 (Dec.) 1946.
14. Hagedorn, A. B. and Scheifley, C. H.: Subacute Bacterial Endocarditis, A Case Report, Proc. Staff Meet., Mayo Clin. 23:14-16 (Jan. 7) 1948.
15. Christie, R. V.: Penicillin in Subacute Bacterial Endocarditis, Brit. M. J. 1:1-4 (Jan. 3) 1948.
16. Tumulty, P. A. and Harvey, A. M.: Experiences in the Management of Subacute Bacterial Endocarditis Treated with Penicillin, Am. J. Med. 4:37-54 (Jan.) 1948.

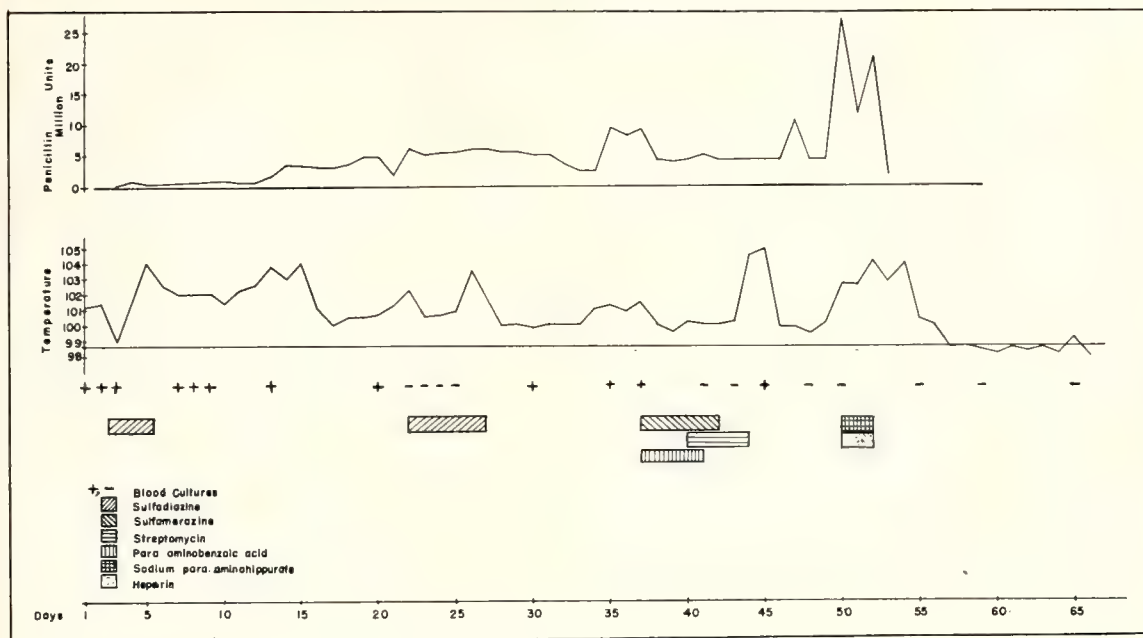


Fig. 1

(17 per cent nonsegmented) and 11 per cent lymphocytes. The sedimentation rate (Wintrobe—corrected) was 23 mm. in an hour. Blood Kahn and Wassermann reactions were negative. The blood prothrombin time was 74 per cent of normal. A voided specimen of urine had a specific gravity of 1.015 and a pH of 5.5; it showed a trace of albumin, no sugar, 10 to 15 white blood cells per high power field, and rare granular casts in the centrifuged sediment. Blood nonprotein nitrogen was 27 mg. per 100 cc. The icterus index was 7.

An electrocardiogram on August 29 showed a rate of 134 with low or flat T waves in all limb leads and in lead CF-IV; a small Q_2 and a moderately deep Q_3 were present. Roentgenograms of the chest were initially normal and later revealed a general increase in pulmonary markings and generalized cardiac enlargement. Results of blood cultures are indicated on the accompanying chart (fig. 1).

The patient remained in the hospital for sixty-seven days. During much of the time she was severely ill and often semi-stuporous. There were evidences of multiple emboli to the finger tip, the spleen, the kidneys, the lungs, and even to the central nervous system, producing the characteristic syndrome of embolic encephalitis⁽¹⁷⁾. The general course of her illness and the specific therapy are indicated graphically in figure 1.

On admission the administration of moderately large doses of salicylates was begun because of the possibility of active rheumatic fever. Two days after admission, however, the blood culture was reported positive for an organism which was identified only as beta *Streptococcus hemolyticus*. The administration of penicillin was begun, and the amount was gradually and constantly increased as indicated on the chart. The drug was given by intermittent intramuscular injection and by continuous intravenous or intramuscular infusion. Sulfadiazine was administered by mouth for three days, but was discontinued because of the appearance of a rash. In spite of this occurrence, however, sulfadiazine and then sulfamerazine were administered later in con-

junction with penicillin. This time the drugs apparently had no ill effect, though there is a definite possibility that the high spikes in the patient's temperature shortly before the discontinuance of all medication may have been drug fever. Streptomycin was used for a time, and both para-aminobenzoic acid and sodium para-amino hippurate with heparin were given, but it is difficult to say whether either had any effect upon the outcome.

Laboratory facilities for securing penicillin levels were not available, and sensitivity tests with the organism were not done initially. When these studies were begun, it was noted that a laboratory strain of *Staphylococcus aureus* was completely inhibited by 0.04 units of penicillin per cubic centimeter, while the patient's strain of beta Str. hemolyticus was very slightly inhibited by the patient's serum even while she was receiving large doses of penicillin. The same findings were noted again on the thirty-eighth, thirty-ninth, and fortieth hospital days, after the patient had received two doses of 1,000,000 units of penicillin at hourly intervals, the second dose being given one hour prior to the test. The patient's organism showed no sensitivity to a 15 per cent solution of each of various sulfonamide drugs tested. The sensitivity to streptomycin was so slight that the laboratory reported that the effective concentration would have to be 1,000 units per cubic centimeter.

It was unfortunate that more accurate, quantitative sensitivity studies could not be obtained. Those available, however, demonstrated the great resistance of the offending organism to the chemotherapeutic and antibiotic drugs, and indicated the necessity for utilizing massive doses of these agents and taking advantage of the synergistic effect of combinations of them if any success were to be achieved.

As a result of these data the dosage of penicillin was increased to a maximum of 1,000,000 units an hour. On two days the patient received 27,000,000 and 24,000,000 units within twenty-four hours. This dosage was a measure of desperation when it seemed that the patient was growing steadily worse and when a positive blood culture was again reported following two negative cultures. On the

17. Alpers, B. J. and Gaskill, H. S.: Pathological Characteristics of Embolic or Metastatic Encephalitis. *J. Neuropath. & Exper. Neurol.* 3:210-223 (July) 1944.

forty-third and fiftieth hospital days the patient's organism was completely inhibited by her serum. Serum drawn on the fifty-first hospital day, however, again caused practically no inhibition in diluted specimens; complete inhibition occurred in undiluted serum containing 5 units of penicillin per cubic centimeter. Because of this finding and because of the further unfavorable sensitivity reactions to streptomycin and to the sulfonamide drugs, it was felt that everything that was possible or justified had been done. Consequently, all medication was discontinued on the fifty-third hospital day. The patient had received a total of 242,900,000 units of penicillin over a period of fifty-three days.

Contrary to all expectations, the patient's temperature fell to normal within three days. She gradually improved and was discharged two weeks after discontinuance of drug therapy. There was still little optimism regarding the prognosis, but her physician reported three weeks after her discharge that there had been no recurrence of fever and that she was doing well. A careful follow-up study in September, 1947, indicated that she had remained well until December, 1946. At that time she had an episode of "flu" with fever and aching, followed by gradually progressive cardiac decompensation with edema. She was finally admitted to a nearby hospital in February, 1947. Her response to digitalization, diuretics, and fluid and salt limitation was good, and she has subsequently remained on digitalis. In March, 1947, she suddenly noticed black spots in front of her eyes, became unconscious, and had a convulsion. She remained unconscious for two days, had no memory for that time, and awoke without headache, weakness, or other residual symptoms. Since then she has occasionally had episodes of "funny feeling" and dizziness, and at times has had palpitation. She has, however, been out of bed during the day and has been fairly active. Her energy is good and she has no dyspnea. Early in September, 1947, she was able to return to work.

Examination at this time revealed the blood pressure to be 140 systolic, 80 diastolic, the temperature 97.8 F., pulse 88, and weight 140½ pounds. There was moderate cardiac enlargement and a harsh, grade 4 systolic murmur was heard over the entire precordium, loudest at the apex; no diastolic murmur was audible. The remainder of the examination was essentially normal. Fluoroscopy confirmed the presence of cardiac enlargement and showed a definite prominence in the region of the left auricle. Urinalysis showed a pH of 5 and a specific gravity of 1.014; the urine was negative for albumin and sugar, but contained 2 to 4 leukocytes and 3 to 6 erythrocytes per high power field. A blood count showed 13 Gm. of hemoglobin, 4,050,000 erythrocytes, and 8,250 leukocytes. The sedimentation rate was 24 mm. in an hour. The blood Wassermann reaction and two blood cultures were negative.

Present Principles of Treatment

In this case we see illustrated several principles of importance in the treatment of subacute bacterial endocarditis. The necessity for establishing a bacteriologic diagnosis before therapy is begun and for preserving a culture of the original organism is obvious⁽¹⁸⁾. Though it may not always be neces-

sary or possible to do sensitivity studies or to follow penicillin levels in the blood, both of these procedures may become of primary importance in certain cases where the response to the initial program of therapy is unsatisfactory. They may indicate the dosage of penicillin which will be necessary, and suggest whether the sulfonamides or streptomycin⁽¹⁹⁾ may effectively be used in combination with penicillin. On the other hand, we must remember that studies *in vitro* cannot duplicate conditions *in vivo*, and that exact dosages of drugs can not be calculated from the former. No studies *in vitro*, not even those utilizing the patient's own serum, can satisfactorily evaluate the many variables which are included in the term "patient resistance."

The necessity for giving adequate initial treatment and for increasing the amounts of the drug subsequently or adding other medications, according to the patient's response and in the light of special laboratory data, should be emphasized. The administration of small amounts of penicillin or of the sulfonamide drugs in patients with fever who are suspected of having subacute bacterial endocarditis is unwise. Such therapy may simply obscure the diagnosis temporarily and render the offending organism insensitive, or at least less sensitive, to the drugs which constitute now our major weapons, thus lessening the chances of accomplishing a complete cure later. This case makes it obvious that therapy should be continued over a long period, in spite of initially unfavorable results.

On the basis of present knowledge, though there are differences of opinion regarding details, it would seem that a basic program of treatment for subacute bacterial endocarditis should include 100,000 units of penicillin every two to three hours—a total of 800,000 to 1,200,000 units of penicillin every twenty-four hours—until the patient shows a satisfactory response. Therapy should then be continued at a reduced dosage for a minimum of six to eight weeks. It is generally agreed that certain other chemotherapeutic agents may at times be used to achieve a synergistic effect in such a program. At the same time blood transfusions, vitamins, an adequate diet, and all other measures

18. (a) MacNeal, W. J. and Blevins, A.: Bacteriological Studies in Endocarditis, *J. Bact.* 49:603-610 (June) 1945; (b) Hunter, T. H., Duane, R. B., Jr.: Subacute Bacterial Endocarditis due to Gram Negative Organisms, *J. A.M.A.* 132: 209-211 (Sept. 28) 1946; (c) McDermott, W., Leask, M. M., and Benoit, M.: Streptobacillus Moniliformis as a Cause of Subacute Bacterial Endocarditis: Report of a Case Treated with Penicillin, *Ann. Int. Med.* 23:414-423 (Sept.) 1915.

19. (a) Hunter, T. H.: Use of Streptomycin in the Treatment of Bacterial Endocarditis, *Am. J. Med.* 2:436-442 (May) 1947; (b) Priest, W. S. and McGee, C. J.: Streptomycin in the Treatment of Subacute Bacterial Endocarditis, *J.A.M.A.* 132:124-126 (Sept. 21) 1946.

which tend to enhance the resistance of the patient should be employed. The use of anti-coagulants is unnecessary and probably dangerous. In spite of some conflicting reports, there is much evidence that their use increases the already considerable hazards of the disease⁽²⁰⁾.

That these patients must be carefully followed after recovery is evident. It is necessary to take all the known precautions to prevent reinfection and to utilize every means of detecting and treating it promptly should it occur. As this case illustrates, we must also be constantly alert for secondary cardiac complications, to which patients who have recovered from subacute bacterial endocarditis seem to be particularly susceptible⁽⁵⁾.

Summary

1. The methods of treatment employed in subacute bacterial endocarditis have been reviewed and the results achieved by these various methods have been evaluated.

2. The great improvement in the prognosis of this disease which has been accomplished through the use of penicillin has been shown.

3. A case of bacterial endocarditis, probably subacute, due to the beta Str. hemolyticus is reported. In spite of an insensitive organism, serious complications, and initially discouraging results, a satisfactory response was achieved following a total dosage of 242,900,000 units of penicillin, combined at intervals with other chemotherapeutic agents.

4. The general principles of the current treatment of subacute bacterial endocarditis have been outlined.

20. (a) Katz, L. N. and Elek, S. R.: Combined Heparin and Chemotherapy in Subacute Bacterial Endocarditis, *J.A.M.A.* 124:149-152 (Jan. 15) 1944; (b) Cooke, W. T. and Taylor, A. B.: Treatment of Subacute Infective Endocarditis with Heparin and Chemotherapy, *Brit. Heart J.* 5:229-237 (Oct.) 1943; (c) Meyer, O. O. and Thill, C. J.: Penicillin and Dicumarol, and Penicillin in the Treatment of Subacute Bacterial Endocarditis, *J. Lab. & Clin. Med.* 31:487-490 (April) 1946.

In a nationalized medical service not only would the personal relationship between doctor and patient be largely lost, but there would be a tendency for the "case", no longer a "patient", to be sent the rounds of the medical factory, see a number of specialists, have performed on him a number of tests and never at any time have a good general appraisal in which due consideration is given to the personal and clinical history and the ordinary bedside examination.—Leslie Hurley: *The General Practitioner and the Specialist*, *M. J. Australia* 1: 68 (Jan. 17) 1948.

EARLY AMBULATION IN ABDOMINAL SURGERY

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and

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The practice of employing early ambulation in abdominal surgery is not a new one, for it was recommended by Ries in 1899⁽¹⁾. It has been only during the last seven years, however, that the practice has gained widespread support in this country. The history of early ambulation has been covered by other authors⁽²⁾. The purpose of this article is to present experiences gained from an active surgical service in a small hospital and to approach the subject from a clinical point of view.

Physiologic Effects of Bed Rest

Recumbency affects almost all the organs in the body, particularly the cardiovascular, respiratory, gastrointestinal, and urinary systems. It has been shown that the recumbent position causes an impairment of the circulatory reflexes⁽³⁾, a diminution of cardiac output, a venous pressure deficit, a blood volume deficit, and a decrease in the reserve of the venopressor mechanism. It has been further shown that the longer the horizontal position is maintained, the slower the convalescence from disturbed cardiovascular function. The stasis of venous blood in the pelvis and lower extremities which results from bed rest is of unquestionable importance in the development of phlebitis and phlebothrombosis. Prompt and repeated rising after surgery has been found to effect a rapid return of the circulation to normal.

The decrease in the vital capacity of the lungs, in the function of the diaphragm, and in the efficiency of the cough reflex which is

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1. Ries, E.: Some Radical Changes in After-Treatment of Celliotomy Cases, *J.A.M.A.* 33:454-456 (Aug. 19) 1899.
2. (a) Burch, J. C., and Fisher, H. C.: Early Ambulation in Abdominal Surgery, *Ann. Surg.* 24:791-798 (Oct.) 1946; (b) McClure, Roy D.: Early Ambulation after Operation, *Editorial, Am. J. Surg.* 70:1-3 (Oct.) 1945.
3. (a) Bellis, C. J., Doss, A. K., and Craft, C. B.: The Circulation Rate after Operation, with Special Reference to Effect of Position, *Surgery* 13:35-45 (Jan.) 1943; (b) Mayerson, H. S., and Burch, G. E.: Relationship of Tissue (Subcutaneous and Intramuscular) and Venous Pressures to Syncope Induced in Man by Gravity, *Am. J. Physiol.* 128:258-269 (Jan. 1) 1940; (c) Snyder, J. C.: The Cardiac Output and Oxygen Consumption of Nine Surgical Patients before and after Operation, *J. Clin. Investigation* 17:571-579 (Sept.) 1938.

produced by prolonged recumbency⁽⁴⁾ is apt to result in some degree of atelectasis. Schafer and Dragstedt⁽⁵⁾ have pointed out that this condition probably accounts for the fact that bedridden patients usually maintain a higher and more prolonged elevation of temperature than those who are allowed to be up. They have shown that the erect posture produces a downward pull on the abdominal contents, lowering the diaphragm and increasing the efficiency of the cough reflex.

Almost all who have practiced early ambulation have noted the usual prompt return of gastrointestinal function and the rare occurrence of urinary retention.

Basis of Report

Two groups of cases have been used as the basis of this report. One group of 154 patients were on the surgical service of Dr. J. Montgomery Deaver, Lankenau Hospital, Philadelphia, Pennsylvania, during the period April 1 to September 21, 1946. All of these patients were seen personally by the junior author each day during the postoperative period. The other group of cases includes 440 abdominal operations performed at the Scotland County Memorial Hospital between November 11, 1946, and October 21, 1947. All of these patients were seen by both authors each day during the postoperative period of hospitalization. In both groups only those patients who sat up in a chair at least by the end of the first postoperative day and who walked at least by the end of the second postoperative day are included. In about half of the cases here reported the patients walked within the first twenty-four hours after operation; the others walked by the end of the first forty-eight hours.

Method of Wound Suturing

With the single exception of McBurney incisions (which we close with chromic catgut), non-absorbable sutures are used to close the fascia. The peritoneum is united with a double continuous no. 0 chromic catgut suture, meticulous care being taken to include the transversalis fascia in this suture

Table 1
Operative Procedures

Operation	No. Cases	Postoperative Days in Hospital (Average)
Appendectomy	223	7.1
Hysterectomy, total, supravaginal	120	10
Pelvic operations, misc.	104	9
Herniorrhaphy	72	8
Cholecystectomy	25	12
Exploratory laparotomy	25	10
Cesarean section	10	9
Intestinal resection	4	12.5
Perforated peptic ulcer.	3	9.1
Colostomy	2	12
Gastric resection	2	10.5
Nephrectomy	2	10.5
Ureterolithotomy	2	10.5
TOTAL	594	

line. Although the choice of non-absorbable sutures is now multiple, we still prefer to close the anterior rectus sheath with interrupted no. 28 or no. 30 alloyed steel wire. Rarely are sutures used in the muscle. The skin is almost always closed with Michel clamps. We do not use through-and-through retention sutures, as we feel that they do not add strength to the incision, that they greatly increase postoperative discomfort, and that they add to the danger of hematoma and infection. We use vertical and transverse incisions with no noticeable difference in our results, but never employ midline incisions; we feel that paramedian muscle displacement incisions give added strength to the wound. Skin clips are removed on the fourth day in transverse incisions and on the fifth day in vertical ones.

Technique of Ambulation

Until recently we tried to get our patients to walk between the eighth and forty-eighth postoperative hours, but we have now come to feel that early ambulation is of limited value unless the patient actually walks before twenty-four hours have elapsed. We make no attempt to explain early rising to the patient pre-operatively, as this practice has caused anxiety in some cases. The nursing staff is given detailed instructions as to the technique of getting the patient out of bed. In some instances it is only after reassurance by a competent nurse that the patient consents to early postoperative ambulation. In most cases, however, the patient displays eagerness to participate in this activity.

If the operation has been a major one, the patient is asked to lie on his side near the

1. (a) Ceryloss, P. N.: Postoperative Pulmonary Complications and Bronchial Obstruction, *Surg., Gynec. & Obst.* 50: 795-827 (May) 1930; (b) Powers, J. H.: Vital Capacity: Its Significance in Relation to Postoperative Pulmonary Complications, *Arch. Surg.* 17:304-323 (Aug.) 1928.
5. Schafer, P. W., and Dragstedt, L. R.: "Early Rising" Following Major Surgical Operations, *Surg., Gynec. & Obst.* 81:93-97 (July) 1945.

edge of the bed, assistance being given if necessary. The head of the bed is then elevated to a high back-rest position, and the patient is allowed to dangle his feet. If vertigo ensues, the procedure is repeated later until this is overcome. In the case of appendectomies and most herniorrhaphies it has been found that the patient can sit up on the edge of the bed with only slight assistance from the nurse. After the patient has sat with his feet dangling for a few minutes, he is assisted to his feet, permitted to walk ten to twenty paces with assistance, and then allowed to remain in a chair for fifteen to twenty minutes. This procedure is repeated one to three times on the first postoperative day. On the second day the patient is permitted short walks in the corridors and bathroom privileges. From this point on, walking is rapidly increased as the patient tolerates it. We have found that most patients are almost fully independent by the fourth day following laparotomy.

In addition to ambulation, we insist from the start that the patient be active while in bed. He is encouraged to take deep breathing exercises, to change position at least once an hour, and to dorsiflex the feet at least a thousand times each day. This practice, we feel, helps in a great measure to lessen the stagnation of venous blood. We have found that these foot exercises, since they automatically elicit Homans' sign, have made possible a much earlier diagnosis of phlebitis, when present, by causing the patient to complain of pain early in the course of this complication.

Results

Complications in the group of cases reported have been summarized in table 2. There has not been a single death in the series of 594 cases.

Wound healing

In all but 5 cases healing was by primary intention; faulty healing was due to superficial infection in 2 instances and to hematoma in 3. There were no wound abscesses and no wound disruptions, and until the present time no incisional hernias have occurred. We have noted more satisfactory wound healing in those patients who have walked early than in those who have been subjected to prolonged bed rest. Possibly the reason for this fact is the almost complete absence of distention in the former.

Table 2
Complications

Complication	No. Cases
Phlebitis	7
Pulmonary embolus	3
Hematoma of wound.....	3
Wound infection, superficial	2
Urinary retention	2
Intraperitoneal abscess	2
Acute bronchitis	1
Atelectasis	0
Pneumonia	0
Ileus	0
Evisceration	0

Seventy-two of the cases reported here are herniorrhaphies. About 90 per cent of these patients have been followed for periods ranging from two to fifteen months. To date there have been no known recurrences of hernia. We employ early ambulation in all of our hernia cases, whether they be incisional, umbilical, femoral, or inguinal, direct or indirect. Our feeling is that a wound may be disrupted by involuntary actions such as coughing, sneezing, or vomiting, or by pressure from distention. It is not disrupted by voluntary effort, for the patient will not hurt himself. We feel that any activity within the limits of comfort is safe.

Ileus

Probably the greatest gratification we have experienced with early ambulation has been the almost complete absence of pulmonary complications and postoperative ileus. We are all familiar with the common occurrence of ileus, with distention and vomiting, following hysterectomies, cholecystectomies, and other abdominal procedures when the patient is restricted to bed. In the 594 cases reported here—and 234 of them were pelvic operations, often in the presence of infection—no patient required the insertion of a Levine tube postoperatively. If this were the only advantage that early rising had to offer, it in itself would be adequate reason for the routine employment of this procedure. We have found a corresponding decrease in the need for postoperative fluids and for the usual third-day enema, bowel movements often being spontaneous before the third day.

Pulmonary complications

We have made it routine to order patients with respiratory infections out of bed within ten hours after operation. This practice has not increased the incidence of headache following spinal anesthesia. The only notable

pulmonary complication in our series was one case of acute bronchitis. Recognizable atelectasis did not appear in any case, and there was not a single case of postoperative pneumonia.

Vascular complications

Our experience with thrombophlebitis and embolism has not been as gratifying. Phlebitis occurred in 7 of our 594 cases—an incidence of 1.2 per cent. In these 7 cases there were three major pulmonary emboli, none being fatal. A careful study of each of these cases revealed that not one of the patients walked on the first day, or more than a few steps on the second day. All of them were up in a chair on both days. It appeared significant that none of the patients who walked on the first day had phlebitis or embolic phenomena.

There is little doubt that venous complications begin early after surgery, and in order to prevent them it is imperative that the patient walk within a matter of hours after his return from the operating room. If to this practice one adds reasonable exercises for the patient during the time he spends in bed, it stands to reason that the dreaded vascular complications of surgery can be greatly diminished.

Urinary retention

We still see cases of urinary retention, and we have no definite statistics on the frequency of its occurrence. We can safely state, however, that the incidence of this complication has been cut in half.

Summary and Conclusion

A series of 504 cases of abdominal operations in which early ambulation was employed is reported. There was no mortality. The incidence of postoperative complications, with the possible exception of phlebitis, was decreased markedly. The technique of early ambulation is described, and the rationale of this practice is discussed.

Except for cases of shock, severe generalized peritonitis, cardiac failure, and a few other conditions which require bed rest, all of our patients are made to walk during the first twenty-four hours after abdominal surgery. We have found this practice a sound one. Except for those conditions which demand bed rest, we have found no contraindications to early ambulation, and recommend its use without qualification.

DOES THE EFFECTIVENESS OF INFLUENZAL AND RICKETTSIAL VACCINES JUSTIFY THEIR USE?

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The prevention of acute infectious diseases is a goal which physicians try to achieve by various means. The benefit derived from immunization with vaccines, as a means of preventing infections, must be weighed against the possible dangers inherent in their use. The use of vaccines should be given especially careful consideration if the material utilized is allergenic and if the recipient is hypersensitive or has an allergic family background. The new vaccines employed for prophylaxis against virus and rickettsial diseases are grown in chick embryonic tissue. It is common knowledge that egg is a substance to which many members of the population are sensitive.

Each of these types of vaccines induces variable immune responses in different individuals. Those who have used the vaccines most consider them to be of greater value in ameliorating the effects of the infections than in preventing them completely⁽¹⁾. The duration of immunity seems to extend little beyond one year; if the vaccine has been given two or more years in succession, immunity may be greater. It is possible that children are more fully protected than are adults.

Benefits

Viral vaccines

The severe epidemic of influenza which followed World War I is still vividly remembered by the physicians who cared for its victims. The cyclic recurrence of epidemics of influenza would suggest that another pandemic is now overdue. Most of the recent epidemics in this country have been traced to two viruses—influenza A and B⁽²⁾. Effective vaccines have been prepared which induce in susceptible individuals a demonstrable immune response to these viruses. The most enthusiastic reports on the use of influenza vaccine have come from studies

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Read before the Southeastern Allergy Association, Richmond, Virginia, January 17, 1948.

1. Francis, Thomas, Jr. and others: The Present Status of Vaccination Against Influenza, *Am. J. Pub. Health* 37: 1109-1112 (Sept.) 1947.
2. Francis, T., Jr.: A Consideration of Vaccination against Influenza, *Milbank Mem. Fund Quart.* 25:3-20 (Jan.) 1947.

Table 1

	Total	Lost Time from Work		Days Lost	
		No.	Percent.	Total	Av. for Each Employee
Group 1 — Vaccinated	2315	180	7.8	904	5.02
Group 2 — Not Vaccinated	8156	701	8.6	3502	4.96

conducted on large, homogeneous groups of people.

During the past few years the death rate from influenza in North Carolina has been very low. In 1945 only 410 out of 28,612 deaths were attributed to influenza. In 1946, 286 out of 28,371 deaths were attributed to this cause⁽³⁾. In a 200-bed general hospital in Winston-Salem, only 2 cases of influenza were admitted in 1946, and 17 cases in 1947. Only 9 patients with influenza were admitted to the North Carolina Baptist Hospital during 1946. The apparent mildness of clinical influenza in our section of the country during recent years makes it difficult to evaluate the effectiveness of influenza vaccine. Evaluation is particularly difficult when one is dealing with heterogeneous groups of people in private practice, rather than homogeneous groups in institutions or in the armed services. In spite of these difficulties, I have attempted to estimate the efficacy of influenza vaccine in my part of the country during the past few years. The same benefits and dangers inherent in the use of influenzal vaccines would be expected from other virus vaccines grown on chick eggs, such as those for encephalitis, yellow fever, and rabies.

Since upper respiratory infections are the leading cause of loss of time from work, industrial plants have become interested in prophylactic immunizations as a means of reducing the number of days lost. Two of the largest industries in Winston-Salem have allowed me to review their records for influenza vaccinations in 1946.

In one plant 841 employees received the vaccination. Minor reactions occurred in 18 per cent, but there were no major reactions. Only two persons lost time from work as a result of vaccination. This study has not been thoroughly controlled, but is comparable to the problems encountered in practice. The physician in charge of this project stated that, on the basis of time lost during the period when the greatest incidence of influenza would be anticipated, no significant difference was noted between the vaccinated

and the unvaccinated groups.

The results of the influenza vaccinations in the other industry are shown in table 1. This study is as well controlled as one can reasonably expect in an industrial group. There is no significant difference between the two groups in the average number of days lost by each employee during the influenza season.

Broadbent and Menefee reported that they gave influenza vaccine to 85 students after the onset of an epidemic in a North Carolina college during 1945⁽⁴⁾. The incidence of influenza in the vaccinated group was 2.3 per cent; in the control group, 8.6 per cent. It should be noted that the immunizations were not given until *after* the onset of the epidemic. It is known that an effective immune response can be detected within seven to ten days after administration of the vaccine, and that the peak of effectiveness is reached after two weeks. For compact groups vaccination may be withheld until a local epidemic is eminent.

The health officer in a county adjoining Forsyth vaccinated almost 1000 persons in 1946; until today he is not sure whether or not the vaccine was of benefit.

In my private practice, influenza vaccine has been administered only on the direct request of the patient; it has been explained to each patient that the vaccine is specific only for influenza A and B and is of no value in preventing common colds or other types of upper respiratory infections. The private practice of an individual doctor is made up of a heterogeneous group exposed to many possible sources of infection. In my practice it has been impossible to conduct an adequately controlled study. Furthermore, a true epidemic of influenza has not occurred in my section of the country since I began this investigation. However, the incidence of influenza among patients immunized with influenza vaccine A and B has been very little, if any, less than among patients not taking the vaccine.

One allergic patient of mine to whom in-

3. Personal Communication from Dr. C. P. Stevick, Acting Director, Division of Vital Statistics, N. C. State Board of Health.

4. Broadbent, T. R., and Menefee, E. E., Jr.: The Effect of Immunization on Epidemic Influenza, North Carolina M. J. 7:553-554 (Oct.) 1946.

fluenza vaccine was given in the first week of November, 1947, came down with atypical virus pneumonia before the end of the month. My experience led me to obtain the opinion of about three dozen physicians throughout the country, including many allergists, as to their experience with influenza vaccine. Three fourths of them have used the vaccine very little or were not enthusiastic over the results obtained.

Rickettsial vaccines

Vaccines have been prepared against epidemic typhus⁽⁵⁾ and scrub typhus—tsutsugamushi disease. Military experience has shown these vaccines to be apparently effective in controlling epidemics, where they are used in conjunction with other prophylactic measures, such as eradication of the insect vector by DDT and removal of troops from the infected area⁽⁶⁾. About three years ago a mild outbreak of endemic typhus occurred in Winston-Salem. This infection is transmitted from rat to man by the rat flea. The infected area of the city was readily discovered, and a program of typhus control which included the rat-proofing of buildings and extermination of rats was instituted by the city in cooperation with the U. S. Public Health Service. Only one worker in the construction and eradication crews took typhus vaccine. There has been no case of typhus among the workers or employees in the buildings infested with rats since the program was undertaken.

In North Carolina a moderately severe strain of *Rocky Mountain spotted fever* is endemic. About 50 cases of rickettsial spotted fever, with a death rate of 23 per cent, have been studied at the Bowman Gray School of Medicine in recent years. Throughout the state the mortality has been approximately 35 per cent. Though the use of para-aminobenzoic acid promises to reduce the death rate somewhat, the problem is still a great one. Effective vaccines against this strain of rickettsia are prepared from chick eggs and from the tissues of infected ticks⁽⁷⁾. The incidence of infection in wood or dog

ticks in North Carolina is unknown, but is probably low.

Ticks may carry a strain of low virulence which will produce a mild infection, or a strain of high virulence producing severe disease. The incidence and severity of the infection vary greatly from year to year in the same community, and in the same year between closely adjacent communities. Evaluation of the effectiveness of vaccine is therefore difficult. Administration of the vaccine is not advocated for large groups of people unless they live in a highly endemic area, or one where the strain is highly virulent. Individuals who expect to take a hunting or fishing trip, who picnic often, or who, for some occupational reason, expect to be in woods and fields should take the vaccine. Since most of the cases of Rocky Mountain spotted fever in North Carolina occur in children, it would seem advisable to consider immunization as a routine procedure for children.

The discovery of a new rickettsial disease—*rickettsialpox*—makes it highly probable that a vaccine against this mite-borne disease of rats may be available shortly.

Dangers

It is recognized that allergic manifestations occur in approximately 10 per cent of the general population. Ratner and Untracht⁽⁸⁾ have stated that 10 per cent of allergic persons are sensitive to egg and its related proteins. One would therefore anticipate that 1 per cent of people in the general population are allergic to egg protein. Roth⁽⁹⁾ reports 9 cases of allergic reactions to typhus vaccine. Since only 4 of the reactors gave a history of allergy to egg, it is obvious that the history alone is not reliable in excluding individuals. One soldier, immediately after the first injection of the vaccine, had extreme dyspnea, cough, weakness, substernal pain, cyanosis, and other symptoms of shock.

That influenza vaccine is not given without some danger is shown by the following case history:

A previously healthy white man, aged 38, was given influenza vaccine in the course of a group immunization. None of the patients were skin-tested. Five minutes after the injection he began to complain of a throbbing sensation in the back of the head, which was followed by a continuous head-

5. Cox, H. R. and Bell, E. J.: Epidemic and Endemic Typhus; Protective Value for Guinea Pigs of Vaccines Prepared from Infected Tissues of the Developing Chick Embryo, Pub. Health Rep. 35:110-115 (Jan. 19) 1940.

6. Mackie, T. T. and others: Observations on Tsutsugamushi Disease (Scrub Typhus) in Assam and Burma; Preliminary Report, Am. J. Hyg. 43:195-218 (May) 1946.

7. (a) Cox, H. R.: Rocky Mountain Spotted Fever; Protective Value for Guinea Pigs of Vaccine Prepared from Rickettsiae Cultivated in Embryonic Chick Tissues, Pub. Health Rep. 34:1070-1077 (June 16) 1939; (b) Parker, R. R.: Rocky Mountain Spotted Fever; Results of Fifteen Years' Prophylactic Vaccination, Am. J. Trop. Med. 21: 369-383 (May) 1941.

8. Ratner, B. and Untracht, S.: Allergy to Virus and Rickettsial Vaccines; Allergy to Influenza A and B Vaccine in Children, J.A.M.A. 132:899-905 (Dec. 14) 1946.

9. Roth, V. E.: Reactions to Typhus Vaccine, Bull. U. S. Army M. Dept. (no. 88) pp. 111-113 (May) 1945.

ache lasting forty-eight hours. Soon after the headache began, he observed tightness in the throat and chest, followed by wheezing. On the following day his eyes and face began to swell and he felt "tight" all over. The symptoms persisted about twenty-four hours and then began to improve spontaneously; generalized soreness and stiffness persisted for several days.

In November, 1947, I gave influenzal vaccine to 130 persons in an institution. Six to 8 per cent had minor reactions, consisting of malaise, low-grade fever, aches and pains; in one instance a very badly inflamed and swollen arm resulted. Francis attributes the latter type of reaction to the presence of a large amount of virus in the preparation and not to the egg and related proteins. The minor reactions are more common.

The need for yearly repetition of the immunizing dose recalls an axiom in allergic practice: repeated injections of any foreign substances may result in hypersensitivity to that substance. Yearly inoculations with viral and rickettsial vaccines prepared from cultures grown on embryonic chick tissue may result in sensitization of patients not now sensitive to egg. Francis⁽¹⁾ states that influenza vaccine does not sensitize, but Ratner and Untracht⁽⁸⁾ believe it possible that this novel method of introducing a food protein may cause some persons to become hypersensitive to egg-containing foods. Experiments indicate that vaccines for typhus grown on membranes are not as sensitizing as those grown on the entire embryonic tissue.

The dangerous reactions associated with the use of the viral or rickettsial vaccines for prophylaxis can be avoided if each prophylactic injection is preceded by an intradermal test dose. Untested patients have been known to have profound or fatal anaphylactic reactions to the first or to subsequent prophylactic injections of influenza vaccine.

Conclusion

None of the vaccines discussed give complete protection against the infections for which they are used, but they make subsequent infections less severe. The protection usually does not exceed one year's duration. Vaccine prepared from material grown on chick egg should not be used in allergic individuals without preliminary skin tests. In fact, it would be wise to test all persons before the administration of such a vaccine.

In certain circumstances yearly administration of a viral or rickettsial vaccine is

indicated. Administration of such vaccines should be decided on the basis of individual need. People entering areas where typhus is endemic should certainly be immunized. Lumbermen, vacationists, and children working or playing in areas where Rocky Mountain spotted fever is endemic should be immunized against this disease. In view of the uncertainty concerning the degree and duration of immunity afforded by influenza vaccine, and the demonstrated effectiveness of immunization after the onset of an epidemic, it would seem wise to withhold widespread prophylactic immunization against influenza until there is reason to believe that an epidemic is beginning.

ANTEMORTEM DIAGNOSIS OF BILATERAL RENAL AGENESIS

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and

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The facial characteristics of infants with complete renal agenesis were recently described by Potter⁽¹⁾ as follows: "The principal changes consist of a mild increase in width between the eyes, a very prominent fold of skin arising at the inner canthus, a flattening of the nose, mild retraction of the lower jaw, and large, low lying ears with incomplete cartilaginous development."^(1a) After correlating these characteristic features with bilateral renal agenesis, Potter reported that absence of kidneys was correctly prognosticated in 2 cases prior to the examination of the interior of the body.

Following is the report of a case in which one of us (F.S.O.) predicted the probable postmortem findings soon after the baby was born and before its death occurred. This case confirms the accuracy of Potter's observations, and emphasizes the fact that this uncommon anomaly can be diagnosed during life.

Case Report

A baby girl was born on July 24, 1946,

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This article has been released for publication by the Division of Publications, Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

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1. Potter, E. L.: (a) Facial Characteristics of Infants with Bilateral Renal Agenesis, *Am. J. Obst. & Gynec.* 51:885-888 (June) 1946; (b) Bilateral Renal Agenesis, *J. Pediat.* 29:68-76 (July) 1946.

to a normal primipara, 27 years old. The mother's prenatal course was uneventful and she went into labor spontaneously two weeks before the expected date of confinement. She was Rh-positive, and the routine laboratory findings were normal. The delivery was entirely normal.

The infant did not cry and made no attempt to breathe. The usual measures for resuscitation were tried, and presently the child began breathing sporadically, taking a gasp about every thirty seconds. No regular respiratory rhythm was ever established. The muscle tone was poor and there was no

sphincteric control of the rectum.

The eyes were rather far apart, and an unusually prominent semicircular fold arose at the inner canthus of each eye and passed backward and outward. The ears were large and low-set, and were partially lacking in cartilage. The chin receded. The diagnosis of bilateral renal agenesis was made on the basis of these findings, which conform with the typical facies of this condition as described by Potter. Furthermore, the child did not urinate. Death occurred about three hours after the infant was born.

At autopsy, performed eight hours after death, the body weighed 2350 Gm. The features previously described were noted (fig. 1). The fontanelles were large and the cranial sutures were wide, the parietal bones being separated by about 1 cm. The muscular and subcutaneous tissue of the lower extremities seemed to be poorly developed.



Fig. 1. This photograph shows the characteristic facies of bilateral renal agenesis. The adrenals can be seen, but kidneys are not present.



Fig. 2. The large lateral masses are adrenal glands. The small masses just below the adrenals are oviducts. The ovaries are greatly elongated. The bladder contains no ureteral orifices.

Both kidneys and ureters were absent. The bladder was small and empty, and contained no ureteral orifices, though the urethra was normal. The adrenals appeared large (fig. 2), and were unusual in shape because of the absence of kidneys. At the lower pole of each adrenal was a small mass of tissue measuring about 8 by 2 by 2 mm.; microscopic study showed these to be fallopian tubes. A fibrous band containing

blood vessels extended upward on each side from the posterior surface of the bladder toward these masses. The ovaries were elongated structures attached to these fibrous bands. Each ovary measured about 40 mm. in length and 2 to 3 mm. in diameter. Microscopic sections were made of each ovary and of the corresponding fibrous band at several levels; these failed to show any other remnants of fallopian tubes or any structures resembling ureters. No trace of a uterus or vagina was found.

The other abdominal viscera, the thoracic organs, and the cranial contents were normal. No other congenital anomalies were found.

ATABRINE IN THE TREATMENT OF TRICHOMONAS VAGINITIS

FRED M. DULA, M.D.

LENOIR

Few curable lesions may be more resistant to therapy than trichomonas vaginitis; the varying success obtained with the many preparations offered by the various pharmaceutical houses is a matter of record. We have recently seen 6 cases, and well remember many others in the past, in which the history was that of recurrent failures with all methods of treatment employed at present.

In the search for some chemical agent with which to combat this infection, our attention was drawn to the morphologic similarity between *Trichomonas vaginalis* and *Giardia lamblia*; this suggested that both organisms might respond in a similar manner to atabrine, which has been used successfully in the treatment of giardia infestations of the gastrointestinal tract.

Accordingly, we began using insufflations of atabrine (30 grains) in finely powdered boric acid (1 ounce). The cervix and vagina were first mopped dry; then about ½ ounce of this mixture was blown into the vaginal canal through a duck-billed speculum. A large cotton-tipped applicator was used to distribute the powder over the entire vaginal surface. The patient was advised to take a lukewarm vinegar douche just before returning for treatment two days later, but to avoid intercourse and other douches.

Four treatments were given at two-day intervals, and a vaginal smear was taken two days after the last treatment. All final smears have been reported as negative in our group of 6 cases. Some vaginitis has persisted for several days after the negative smear was obtained, and in one case a very severe chemical vaginitis forced us to discontinue treatment after the second visit. However, a smear taken several days later, after cessation of the vaginitis, revealed no trichomonad.

No systemic reaction has occurred in any case to suggest that there is appreciable absorption of atabrine through the vaginal mucosa; the only untoward reaction of any type has been local irritation of the vagina in some cases. This chemical vaginitis disappears within a few days after treatment is stopped and the use of boric acid douches begun.

Conclusion

Since all of the 6 patients in this group had suffered from trichomonas vaginitis, despite the use of various treatments, for periods ranging from several months to as long as five years, we believe that the routine use of atabrine in such cases may prove to be of great value.

Maternal Welfare Section*

CASE REPORTS FROM THE RECORDS OF THE MATERNAL WELFARE COMMITTEE

Obstetric Hemorrhage

Obstetric hemorrhage has become the principal cause of maternal deaths in North Carolina. One hundred and fifteen of the 320 maternal deaths which have been completely analyzed by the Maternal Welfare Committee have resulted directly or indirectly from the loss of blood. A careful study of these cases has shown that only 37 of the patients (32 per cent) received a blood transfusion and that only two received a quantity of blood which the Committee considered adequate under the existing circum-

*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

Frank R. Lock, M.D.,

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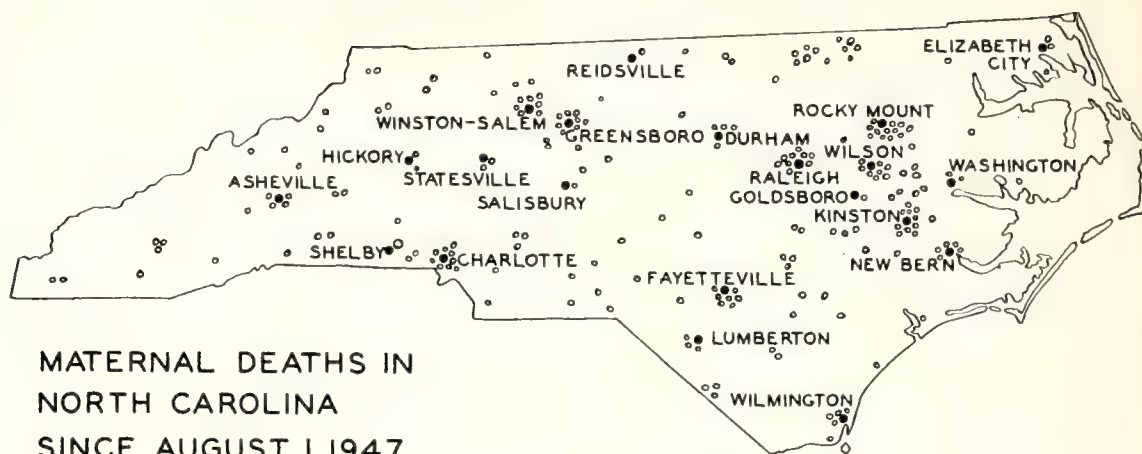
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R. A. Ross, M.D.

R. A. White, M.D.



**MATERNAL DEATHS IN
NORTH CAROLINA
SINCE AUGUST 1, 1947**

stances.

Sixty-eight per cent of the patients did not receive whole blood by transfusion, although the records clearly show that this treatment was the only one which would have saved the patient's life. Glucose solution and plasma were usually administered, but these fluids are of only temporary value in cases of severe blood loss.

A review of the records makes it apparent that the administration of a blood transfusion is a time consuming and difficult procedure in the average North Carolina hospital. Many records have indicated the physician's inability to find a suitable blood donor at the time of the emergency. In one instance, the patient's husband refused to give the blood for a transfusion which might have saved his wife.

Delay in the administration of blood is unavoidable unless the physician has a blood bank available to him. The period of hours which is often required to obtain a suitable donor may mean the difference between life and death. The cerebral damage which may follow even short periods of severe hypotension and anemia often leads to irreversible shock.

The following report is typical of the 115 cases in which death resulted from obstetric hemorrhage.

Case 1—N. C. M. W. C. 133

A white patient, 34 years of age, had five normal pregnancies terminating in the delivery of normal children. She did not consult a physician during her sixth pregnancy. On March 13, 1947, at 1 a.m., she suddenly had an attack of severe abdominal pain, associated with moderate vaginal bleeding. She was at term.

She was taken immediately to an urban hospital. A physician saw her on arrival and obtained a history of moderate edema in the last three weeks of

pregnancy, but no other prenatal complications. Examination revealed a moderate degree of shock; the patient was pale, and the skin was rather clammy to the touch. Blood pressure was 110 systolic, 60 diastolic; the pulse was 104.

Labor pains had begun and were apparent upon examination of the uterus. The uterus did not relax between contractions, and was abnormally hard throughout. Bleeding had apparently stopped. A diagnosis of premature separation of the placenta, with internal and external bleeding, was made. Labor was progressing satisfactorily; the presentation was vertex. The intravenous administration of plasma was started at once, and an attempt was made to find a suitable blood donor. The patient's membranes were artificially ruptured. Her labor progressed rapidly, and spontaneous delivery of a still-born baby weighing 7 pounds, 8 ounces, was immediately followed by the delivery of the placenta and a large amount of clotted blood. One ampule of Ergotrate was administered intravenously immediately following delivery, and an ampule of Pituitrin was given intramuscularly. Moderate bleeding continued, and a second dose of Ergotrate was given fifteen minutes after the delivery. This treatment controlled the patient's vaginal bleeding. Her condition was poor, however, and she became progressively weaker in spite of the intravenous administration of 1000 cc. of blood plasma and 1000 cc. of 5 per cent glucose and saline. She expired two hours following delivery.

A constant search was made for a blood donor during the four hours of this patient's hospitalization, but without success.

Discussion

The hospitals of North Carolina must be prepared to treat hemorrhage immediately by transfusions of adequate quantities of whole blood. Blood transfusions cannot be given promptly unless a blood bank is available. A simple manual upon the formation and maintenance of a blood bank has been prepared by the Maternal Welfare Committee and is available upon request to anyone who is interested in helping to solve this problem. Requests for copies should be addressed to the Maternal Welfare Committee, 300 South Hawthorne Road, Winston-Salem 7, North Carolina.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

DURHAM

VI

THE ANATOMY OF THE LUNGS

Certain portions of the human body have recently been subjected to close scrutiny, and much of value has come from the more accurate knowledge so gained. Physiologists, biochemists, and even clinicians have tended to belittle the study of anatomy, considering it a "dead" subject and one in which there could be no further extension of knowledge. The lungs have proved this notion to be fallacious.

The study of lung anatomy has been much neglected, and the descriptions of this organ given in most of the current textbooks of anatomy are so incomplete or inaccurate as to be misleading. Conventional descriptions have considered the lobes as structural units. The topography and completeness of the fissures which divide them have been described in various ways by different anatomists. Since it was not until recently that various parts of the lung have been removed surgically, there has heretofore been little practical need for a more detailed knowledge of the anatomy of the lung.

The lobe has been considered the surgical unit of the lung. It is merely a segment of lung bounded by more or less constant and more or less complete external fissures. The lobes, however, are in reality made up of clusters of bronchopulmonary segments. As a result of the desire to conserve functioning uninvolved portions of a lobe during surgery, a more thorough knowledge of these bronchopulmonary segments has evolved. The doctor who can approach diseases of the lungs from the viewpoint of the segmental distribution of the bronchi and accompanying vessels need not be at a loss when considering anything less than total lobe disease.

Most writings on bronchial anatomy have been published in the last ten to fifteen years, although the classical accounts of Aeby⁽¹⁾ and Ewart⁽²⁾ appeared during the latter part of the nineteenth century.

Ewart's monograph contains a full and virtually complete account of the bronchial tree. Unfortunately, however, the really essential anatomy is often lost in a detailed description of unimportant branches. Aeby's description of alternate ventral and dorsal branches has been copied by almost all textbooks of anatomy since his time. An acceptable description of the individual distribution, and not on their mode of branching from a parent stem. Certainly the clinical evidences of pulmonary disease are manifested usually in the periphery of the lung. The clinician and the roentgenologist rely on these peripheral changes in making the diagnosis. Diagnosis by bronchoscopy, however, does depend on changes in the major bronchi.

Study of the bronchi by dissection alone can never give a complete picture of their anatomy. Only by the complementary use of bronchial casts and injected specimens can the full story be learned and depicted. Bronchograms and inspection of diseased segments at the operating table, which have been made possible within comparatively recent times, have given much stimulation to studies of the finer bronchopulmonary anatomy.

The operative treatment of bronchiectasis has opened a new chapter in surgical anatomy. This disease is multilobar in distribution, but may be limited to one or more bronchopulmonary segments within a lobe. It therefore becomes mandatory to conserve all the uninvolved bronchopulmonary segments within each lobe. This can be done only if the newer concept of lobar anatomy is understood. Such knowledge is of equal or greater importance in considering the etiology and treatment of lung abscesses. If external drainage is contemplated, it is no longer sufficient to localize the abscess in an upper, middle, or lower lobe. Exact knowledge of the bronchopulmonary segment or segments involved favors proper drainage and the conservation of normal lung tissue.

The segmental concept of the lobe in surgery was applied first to that segment which shows most surface evidence of at least partial segmentation—namely, the lingular division of the left upper lobe. This segment

1. Aeby, C. T.: *Der Bronchialbaum der Säugethiere und des Menschen, nebst Bemerkungen über den Bronchialbaum der Vögel und Reptilien*. Leipzig, Engelmann, 1880.

2. Ewart, W.: *The Bronchi and Pulmonary Blood-Vessels. Their Anatomy and Nomenclature*. London, J. & A. Churchill, 1889.

is usually involved along with the lower lobe in patients with bronchiectasis. Many disappointing results followed removal of the lower lobe because all the diseased bronchi were not removed. In the conventional x-ray films which were formerly relied upon for diagnosis, the lingular division was confused with the lower lobe, was misinterpreted because of the cardiac shadow, or was not considered at all.

In 1939 Churchill and Belsey⁽³⁾ made a report on segmental pneumonectomy in bronchiectasis. This article was made quite complete by the use of specimens, drawings, and bronchograms. The authors stated that the lingular process may be considered as the homologue of the right middle lobe. It occupies a corresponding position, but a well developed fissure is uncommon on the left side. Since the lingula is sufficiently diseased to demand resection in about 80 per cent of the cases of bronchiectasis of the left lower lobe, this segment is an anatomic entity of great practical significance.

Injection experiments made on the human lung demonstrated that the bronchopulmonary segments supplied by the lingular bronchus were constant in size, position, and configuration. In the live patient, bronchograms are the chief sources of information about the bronchial tree. No opinion about certain bronchopulmonary segments can be based upon the single, conventional anteroposterior view; lateral and oblique views are essential for correct interpretation.

The other lobes of the lungs have also been shown to be composed of segments. Brock of England has recently published a monograph⁽⁴⁾ on the anatomy of the bronchial tree, in which he has emphasized the more accurate localization of pulmonary diseases, especially abscesses, in relation to the bronchopulmonary segment involved. Photographs of metal casts of the bronchi, as well as bronchograms, illustrate his points. He divided the right upper lobe bronchus into apical, subapical, and pectoral bronchi, and by injections demonstrated their surface projections. The left upper lobe bronchus has an added branch—the lingula. The lower lobe bronchi on both sides were shown to consist of apical, subapical, and basal bron-

chi. The right side has an added branch—the cardiac bronchus. The middle lobe was shown to have a medial and a lateral bronchus.

Thus, for purposes of accurate localization and description, one should think in terms of at least twenty major bronchopulmonary segments, rather than the five conventional lobes. As early as 1934, Nelson⁽⁵⁾ called attention to the pathologic significance of certain segments. He found that each segment possesses independent bronchovascular structures and is separated from adjacent pulmonary tissue by an avascular plane. Boyden⁽⁶⁾ in 1945 pointed out that, from a practical standpoint, most of the segments can be considered as surgical units, but not strictly as bronchovascular units. Some arteries, mainly in the upper lobes, are intersegmental, and the veins may drain blood from adjacent segments. These facts are of great importance when conservative lung surgery is undertaken.

Further subdivisions and numerous variations occur within the sixteen major bronchovascular segments. These are probably of concern only to the thoracic surgeon.

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*Bowman Gray School of Medicine
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5. Nelson, H. P.: Postural Drainage of the Lungs, *Brit. M. J.* 2:251-255 (Aug. 11) 1934.

6. Boyden, E. A.: Intrahilar and Related Segmental Anatomy of Lung, *Surgery* 18:706-731 (Dec.) 1945.

The busy general practitioner . . . should . . . never forget that his days of study and learning are never over. The medical schools are again all giving excellent postgraduate courses. Don't let any man think he can be a success in his office or in his hospital if he does not take a few weeks occasionally to bring himself up to date on the work he most enjoys.—E. A. Royston: *The Section on General Practice: Its Problems, Its Goals, Its Responsibilities*, California Med. 68:281 (April) 1948.

The general practitioner's obligation to his patients.—A man should be a thoroughly good doctor, whatever group he belongs to. A man belonging to the general practice group should take particular pains to see that he is as nearly correct in his answers as possible. He should not excuse himself by saying, "I am only doing general practice." It is much better when in doubt to call for consultation than to jeopardize the patient and one's own status by giving questionable treatment. The minimum duty of a general practitioner is to attend faithfully his hospital staff meetings. He is sure to learn something scientific each time, and further, it brings him in contact with his fellow staff members.—E. A. Royston: *The Section on General Practice: Its Problems, Its Goals, Its Responsibilities*, California Med. 68:281 (April) 1948.

3. Churchill, E. D., and Belsey, R.: Segmental Pneumonectomy in Bronchiectasis: Lingula Segment of Left Upper Lobe, *Ann. Surg.* 109:481-499 (April) 1939.

4. Brock, R. C.: *The Anatomy of the Bronchial Tree with Special Reference to the Surgery of Lung Abscess*, New York and London, Oxford, 1946.

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JUNE, 1948

GENERAL PRACTICE AS PREPARA- TION FOR SPECIALIZATION

Again and again we are reminded that history repeats itself. In 1866 the Committee on Medical Ethics of the American Medical Association, in a report on the relative merits of specialization and general practice, decided that the disadvantages of specialization "could be overcome if the specialist would begin as a general practitioner and gradually grow into his specialty." At the recent meeting of the Texas State Medical Association, Dr. Willard O. Thompson, professor of medicine at the University of Illinois, closed an address on "Common Sense in Medicine" with the statement that there is no common sense in failing to give credit for time spent in general practice to men seeking certification by a specialty board. He said emphatically that a number of years spent in general practice afforded the best possible training for a specialty. Dr. Thomp-

son's is by no means a lone voice in the wilderness. Within the past few years an increasing number of editorials and articles in medical and lay publications have expressed the same opinion.

Time was when it was the custom for a doctor, after graduating and serving an internship, to do general practice for a variable period of time before limiting his work to one branch of medicine. Then he had the choice of specializing by a sudden transition, after spending some time in postgraduate study, or of eliminating one branch after another until he had narrowed his work to the one field finally chosen. One wonders whether Marion Sims or Sir James Mackenzie would have rendered their outstanding service to medicine had they not served long apprenticeships as family doctors.

One of the most successful and popular surgeons and teachers in our state served an apprenticeship of ten years in general practice before beginning the hospital training leading to certification. This young man is sure that he is a better surgeon because of the years spent in general practice.

Since the trend of recent months is so definitely in favor of restoring the general practitioner to his rightful place, and since Dr. Thompson's suggestion is so in harmony with this trend, it is highly probable that the certification boards will continue to liberalize their requirements in favor of the men who have spent some years in general practice. Among the reasons for giving serious consideration to such a policy are:

1. A specialist should be primarily a *doctor* who has learned to view the patient as a whole instead of seeing only an unrelated segment.

2. It would not be necessary, as is now the case, for a medical student to decide, by the time he has gotten his diploma, whether he wants to be a specialist or a family doctor. Many young men would like to try a few years in general practice before making up their minds. Those who decided, after five or ten years in general practice, that they wanted to specialize, would have helped supply the public demand for family doctors; and it is worth repeating that they would make better specialists because they would have learned to view the patient as a whole. Many would prefer to continue as family doctors.

3. Such a plan would help immensely to

increase the morale of the general practitioner, and to let the public know that general practice is important, if not indeed essential, in the making of a specialist.

4. It would decrease the present overcrowding on the house staffs of hospitals approved for specialty training.

5. It would vastly improve our public relations by increasing the number of doctors available to make house calls and take care of emergencies.

* * * *

DR. CARL V. REYNOLDS

Carl Vernon Reynolds, M.D., who was called to the post of North Carolina State Health Officer on November 10, 1934, has resigned, effective June 30, 1948. He will long be remembered in connection with the advances made by public health during his tenure of office. Since he became State Health Officer, more than \$21,000,000 has been spent on various public health activities in this state. Of this amount, only \$5,903,777 came from state appropriations, while funds allotted by the Federal Government totalled \$13,187,858. The difference, \$2,199,632, came from private contributions.

Dr. Reynolds served his state faithfully and conscientiously. He held a middle-of-the-road course. Although a progressive, he was never a leftist. He preferred the term "supplemental" to "socialized" medicine, holding to the view that those who cannot afford medical care are entitled to receive it at public expense, whether in the field of preventive or curative medicine. His viewpoint in this matter is shared by the best medical thought.

Ironically enough, the state's appropriations to public health have been meager. One wonders whether this policy has been one of penury, or has been due to the federal government's lavish expenditures. What Dr. Reynolds failed to secure through state appropriations came to the state through federal allotments and the generosity of philanthropists. At any rate, his administration was blessed with sufficient funds to place North Carolina in the forefront in many public health projects, notably in the field of venereal disease control.

Many accomplishments are accredited to public health in North Carolina during Dr. Reynolds' term of office—enough to crown his efforts with success. As he goes to California, to enjoy needed and deserved rest

and recreation, Dr. Reynolds carries with him the best wishes of his associates in the medical profession and of the beneficiaries of public health in North Carolina.

* * * *

"WAR, POLITICS, AND INSANITY"

One of the most intriguing books that has appeared recently is a slim volume of 121 pages, entitled *WAR, POLITICS, AND INSANITY*. It is published by The World Press, Denver, Colorado, and sells for \$2.00. Its author is Dr. C. S. Bluemel, superintendent of the Mount Airy Sanitarium, Denver. One remarkable feature of the book is that, although its author is a psychiatrist, it is written in such clear English that any intelligent high school graduate should be able to understand it without difficulty.

In the preface Dr. Bluemel explains how he happened to give birth to his brain child. Following the Democratic landslide in 1932, he saw "a number of local politicians who suffered from mental breakdowns following their political defeat." Many of these defeated politicians committed or attempted suicide. This experience aroused Dr. Bluemel's professional curiosity, and he began "to study the psychological qualities of political leadership and to identify the disorders of personality with which aggressive leadership is commonly associated."

Dr. Bluemel's study has resulted in several interesting observations, which present a challenge to all governments, including our own. One observation is that there are two contrasting types of leadership—one impetuous and dangerous, the other cautious and steadfast. "World security," he says, "will never be attained under aggressive leadership." On the contrary, he thinks that "One of the cardinal causes of war . . . is the fact that national leadership frequently falls to men of abnormal mental makeup."

Dr. Bluemel makes a convincing case for the thesis that the average politician has an aggressive, dominating personality, and that "whatever the form of government . . . dominant men contrive to rule"—for example, Napoleon, Huey Long, and Frank Hague. The pattern of the successful politician "consists in high dominance drive invariably associated with obsessive-compulsive tendencies." This description applies to such labor leaders as John L. Lewis and J. Caesar Petrillo. It is well enough to talk of choosing our political leaders wisely, but Dr. Blue-

mel says that "it is the leaders rather than the followers who exercise political choice."

The author says that the psychiatry of history has never been written, but that "In the appraisal of history hypomania is as important as gunpowder and schizophrenia may be as significant as the atomic bomb." Among the warped personalities who have influenced history he discusses Gandhi, Stalin, Mussolini, Goering, Hitler, Joan of Arc, Oliver Cromwell, Napoleon Bonaparte and George III of England.

The final three of the book's eleven chapters are devoted to democracy: "Democracy in Action," "An Appraisal of Democracy," and "The Future of Democracy." The author refers to Carlyle's viewpoint that one of the principal shortcomings of democracy "is the tendency to establish the talker in the place of honor, while leaving the doer in the obscurity of the crowd." As a concrete example of the power of the talker is cited the filibuster: "It can be said that the passage or defeat of a measure may in some instances be determined by the capacity of the speaker's urinary bladder."

Speaking of democracy in action, Dr. Bluemel says that "The compelling urge to leadership is in itself an abnormal trait and it seldom associates itself with judgment or wisdom . . . the politician of democracy is frequently a man of hypomaniac makeup . . . His reactions are pathologically emotional . . . He conducts his political business with tin horns, cow bells . . . and he precipitates a carnival of confusion which causes sane men to wonder. The broadcast of a political convention disrupts the decorum of an insane asylum . . . No convention of lawyers, doctors, bankers, or teachers spends itself in emotional rioting; only the politician reverts to the pattern of bedlam."

The final chapter is devoted to outlining "a form of government which would be psychologically sound and which would eliminate the man of disordered personality from the ranks of national leadership." This plan is to be selective rather than elective. The franchise would be given only to citizens qualified by education and "certified by the faculty as apparently free from abnormal traits of personality."

Unless human nature changes materially, Dr. Bluemel's plan stands no more chance of being adopted than did Plato's blueprint of the ideal state as given in "The Republic." Nevertheless his book, because of its keen

insight into the nature of politicians and the causes of war, and because of its pleasing literary style, will probably be widely read and discussed by intelligent groups of people.

* * * *

VERDICT AGAINST OSTEOPATH SUSTAINED BY STATE SUPREME COURT

During the September term of court, a Richmond County jury found Osteopath Richard C. Baker guilty of "administering and prescribing drugs in treating the ailments of others without being licensed and registered so to do." Evidence was presented to show that he used a professional card which described himself as a "physician and surgeon." He also gave hypodermic injections and gave oral orders to druggists for certain remedies, patent or proprietary, to be dispensed to his patients.

The defendant appealed to the Supreme Court of North Carolina. A well reasoned decision by Judge Ervin found no error in the judgment of the lower court. This case should put to rest the efforts of osteopaths to get into the practice of medicine in North Carolina by the back door; but constant vigilance will be needed to guard against attempts on the part of other cultists to do what "Doctor" Baker tried to do.

* * * *

"NONE SO BLIND . . ."

There comes to the editorial desk of the NORTH CAROLINA MEDICAL JOURNAL all manner of literature about doctors and about organized medicine. Some is good, some bad, some indifferent. Much of it evidently comes from cranks or from individuals harboring paranoid delusions of persecution. The very bitterness of some of the communications, and the obvious ignorance of the writers concerning their subject matter, mark them as material fit only for the wastebasket.

One example of recent date was a pamphlet which denounced with equal vigor the Christian religion and the medical profession. The amount of research used in its preparation may be gauged by one statement it contained: "No wonder the Mayos refused to join the A.M.A." William J. Mayo was president of the American Medical Association in 1906, and his brother, Charles H. Mayo, in 1917.

"There are none so blind as those who will not see."

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

NEGLIGENCE: A proprietor is not an insurer of the safety of invitees, but is under duty to exercise due care to see that the premises are reasonably safe for the purpose for which they are maintained.

This suit was instituted by the administrator of a boy, aged 12 years, who lost his life by drowning in a public swimming pool. The evidence tended to show that the lad, accompanied by his mother, visited the pool to enjoy the facilities of the amusement park and to wade in the water. According to testimony, the child was unable to swim. Some time about the middle of the afternoon the child was missed by his mother. She immediately informed the guards, two of whom were on duty at the time. The mother insisted that they notify the bathers, but the guards failed to do so and remained at their stations. Later on in the day the mother, becoming more and more terrified over the boy's absence, went directly to the two proprietors of the park and requested that they give out a general alarm. This they did, and after an all-night search the body was found in water 10 feet deep. No physical findings were apparent when the remains were recovered, except a small laceration about the scalp.

In superior court there was no testimony as to the actual cause of death. It was generally assumed that death occurred from drowning, but no legally acceptable proof was offered which definitely established this fact. When all the testimony of the plaintiff had been introduced, the judge in superior court ordered a non-suit. The plaintiff entered an appeal, alleging several exceptions.

The Supreme Court held that the proprietors of the park were not required to be insurers, but were compelled to see that the premises were reasonably safe for the purpose for which they were maintained. Specifically, the court held in this particular case that more guards would not have prevented the drowning, as the two guards on duty afforded adequate protection. The court further asserted that neither failure to institute immediate action on the part of the guards nor failure of the defendants to mark

the depth of the pool had any causal relationship to the death of the boy. In other words, the premises were considered reasonably safe for the purpose for which they were maintained. The Supreme Court affirmed the judgment of the court below.

The rule of law laid down in this case is applicable to any type of business in which the public is invited to enter and purchase service or commodities. It is, therefore, extremely important to the medical profession from a medicolegal standpoint. Frequently physicians are called upon to treat persons who have sustained injuries, actual or alleged, in public places. Because of the likelihood of negotiations for settlement between the parties — or, more often, litigation — it is incumbent upon the doctor to exercise more than ordinary care in his study of the case, as well as in preserving adequate records for future reference. (Supreme Court of North Carolina, April, 1948. V. 228, p. 727.)

Poliomyelitis.—There is no more pitiful picture of the impotence and ineptitude of popular enthusiasm about widely publicized disease than the fantastic promotion of unprofitable measures financed with reckless extravagance for the so-called or assumed "control" of poliomyelitis. These manifestations of newspaper or public-relations experts concerned with dime collections on a percentage basis make monkeys of honest health officers, while hysterical warnings and inflated news items inflame local fears of a disease whose prevalence or fatality no health officer has yet claimed with honesty to have modified. Voluntary agencies riding high on the emotional appeal of the dramatic deformities and sudden deaths from infantile paralysis so mask the truth and exploit the seasonally recurrent prevalence of this disease that rational education of the public regarding the state of our ignorance of effective measures is almost unheard amid the din of personalities, and of the zooming air planes that sprinkle death-dealing dust on house flies and honey bees alike.—Haven Emerson: Whither the Pegasus of Public Health? New England J. Med. 238:683 (May 13) 1948.

There is no future of any promise in any public service that permits or encourages a shift of responsibility for children from the home and the parents into schools and health agencies of government. It may well become a matter of pride and distinction in a community that all useful medical examinations of the child and the correction of remediable defects will have been accomplished prior to school enrollment by the services of the family physician at the request of the parents, only those children whose families are ignorant, impoverished or indifferent being the objects of public-health solicitude and service.—Haven Emerson: Whither the Pegasus of Public Health? New England J. Med. 238:685 (May 13) 1948.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

June, 1948

No. 6

FOR the first time in the long history of tuberculosis there is a drug which, if used in certain forms of tuberculosis at the proper time and in suitable dosage, will favorably influence the course of the disease. In streptomycin physicians have not a specific but a new weapon to be added to those they are already using so effectively.

STREPTOMYCIN IN TUBERCULOSIS

Although attempts to attack tuberculosis by chemotherapeutic means are as old as our knowledge of the disease, it was not until 1940 that Feldman, Hinshaw and Moses reported that promin had a striking effect on tuberculosis induced in guinea pigs. Attempts to use this and a few other drugs clinically followed. The results were suggestive but never fully convincing, possibly because the sulfone compounds were found to be too toxic in the dosage required for treatment of human beings.

From the first, the antibiotic streptomycin gave great promise as an agent for suppressing tuberculosis. In early reports Schatz and Waksman noted that a human strain of *Mycobacterium tuberculosis* was sensitive to streptomycin *in vitro* and further investigations by Feldman and Hinshaw proved conclusively that streptomycin would arrest and at times apparently eradicate well established tuberculosis in the highly susceptible guinea pig.

The clinical use of streptomycin for tuberculosis was begun in December, 1944, and has been used by the author and his colleagues in more than 100 cases of tuberculosis of various types. At present (March, 1948) more than 500 additional patients are being treated with streptomycin at selected institutions under the auspices of the American Trudeau Society as well as a large number elsewhere.

In all discussions of the therapeutic possibilities of streptomycin in tuberculosis the situation must be viewed in proper perspective. The ability of streptomycin to suppress the disease is unique and at times apparently remarkable. The limitations of streptomycin are just as real. Because of certain toxic potentialities, its inadequacy in some clinical situations, and the expense of prolonged periods of treatment, the indiscriminate use of streptomycin in the treatment of tuberculosis must be discouraged.

The use of streptomycin in tuberculosis is indicated in all forms of **hematogenic disease**, including generalized miliary tuberculosis and meningitis, the prognosis of which has hitherto been regarded as hopeless. Of 12 patients who had disease of this type and were treated with streptomycin at the Mayo Clinic, four are living after six to 12 months. In treating tuberculous meningitis it is imperative that streptomycin be given both parenterally and intrathecally and as early as possible in the course of the disease.

Pulmonary tuberculosis suitable for treatment with streptomycin includes recent lesions of bronchiogenic dissemination, exudative lesions, and all recent but rapidly progressive tuberculosis which is not likely to be controlled by the usual methods. Pulmonary tuberculosis has been treated satisfactorily by daily doses of from one to three Gm.,

administered parenterally, for a period of from two to six months. Clinical improvement is noted early and can usually be demonstrated roentgenographically within one to two months. Cavities, especially thick walled, are apt to remain patent. Sputum findings are changed from positive to negative in about half of the cases of far advanced pulmonary tuberculosis.

The patient whose pulmonary tuberculosis has improved during treatment with streptomycin usually continues to improve after this treatment is discontinued.

The use of streptomycin in pulmonary tuberculosis possibly is indicated as an adjunct to surgical procedures, such as lobectomy, pneumonectomy and even thoracoplasty. Streptomycin has been used with notable success in tuberculosis of the hypopharynx, larynx and tracheobronchial tree. Tuberculous draining sinuses have responded well to treatment with streptomycin, even those of long duration.

Streptomycin therapy has shown encouraging results with cases of tuberculosis of the alimentary tract and peritoneum and tuberculosis of bones and joints.

Streptomycin has been somewhat disappointing in the treatment of some cases of tuberculosis of the genitourinary tract. Marked symptomatic improvement occurs in more than 50 per cent of such cases and the degree of tuberculous bacilluria usually is reduced. It is not a substitute for surgical procedures in cases of unilateral renal tuberculosis.

Among tuberculous conditions in which streptomycin is not indicated are included all cases in which satisfactory progress is made on a regimen consisting of the usual therapeutic measures. This category would include most cases of minimal pulmonary tuberculosis. The potential toxicity of streptomycin appears to be sufficient to deny the drug to patients who can make a satisfactory recovery without it.

At present chronic fibrocaseous pulmonary tuberculosis is not considered suitable for treatment with streptomycin except in combination with surgery nor are terminal cases of destructive pulmonary tuberculosis except as a palliative procedure. Treatment of tuberculous empyema with streptomycin has been disappointing.

It must always be emphasized that treatment with streptomycin is not a substitute for rest in bed and sanatorium care, which are still fundamental in the treatment of tuberculosis. It cannot be expected to supersede collapse therapy and other surgical procedures when these are indicated.

Our knowledge of streptomycin is still in a state of flux. Its ultimate place in the treatment of some types of tuberculosis will be determined only after the extensive clinical investigation now under way is complete. Experience with this antibiotic agent has proved that tuberculosis is a disease amenable to antibacterial therapy and it is hoped that other usable agents will be forthcoming.

Streptomycin in Tuberculosis, H. Corwin Hinshaw, M.D., Marjorie M. Pyle, M.D., and William H. Feldman, D.V.M., *The American Journal of Medicine*, May, 1947.

Suggested Reading:

1. Rep of Council of Phar. and Chem., J.A.M.A., Nov. 8, 1947.
2. Am. Rev. Tuberc., Nov. and Dec., 1947. 21 articles.
3. North Carolina M. J., Nov., 1947. 3 articles.
4. Nat. Tuberc. A. Bull., Dec., 1947.
5. Ann. Int. Med., May, 1945.
6. Ann. Int. Med., Nov. and Dec., 1947.

PUBLIC RELATIONS

PUBLIC RELATIONS AS A PROBLEM OF CONCERN TO THE PEOPLE, THE PHYSICIANS, AND THE MEDICAL CARE COMMISSION

Problems of public relations involving the people, the Medical Care Commission, and the physician are extensive. The part of this field in which the North Carolina Medical Care Commission is most deeply involved relates to the building and equipment of hospitals, mainly those to serve counties or other local areas. Two thirds of the one hundred counties of the state already have hospitals in operation. The facilities of many of them are inadequate. Some are obsolete and should be abandoned. These hospital areas, fortunately, have boards or other agencies to deal with their hospital problems. Such communities have had experience in operating hospitals, and they know their needs for replacements and for expansion. In general, these communities will be prompt in seeking all available state and federal aid for the expansion of their hospital facilities; and they will readily raise by taxation, bond issue, or by private contributions the necessary local share of funds.

The concern of the Commission relative to the needs of these sixty-seven counties is real and sincere; however, its greatest anxiety relates to one third of the counties of the state, which now have no hospital facilities. In general, these counties have very limited financial resources, and their potentialities for raising funds by taxation, by bond issues, or by private subscriptions likewise are limited. They have no organized leadership to deal with their hospital and medical care problems. At the same time, these counties are inadequately supplied with physicians, dentists, and nurses. The average age of doctors who serve them has steadily risen; many have died, and have not been replaced by recently graduated physicians.

North Carolina, on the basis of need and economic resources, fared quite well in the allocation of federal funds to the states. Federal funds to all counties of the state, regardless of their economic status, is uniformly one third the cost of approved projects. The Medical Care Commission has tried to correct the situation. It has allocated state

funds up to 50 per cent of the total cost of approved hospitals for these needy counties, whereas it has allocated only 10 per cent for the total cost of approved hospitals to the wealthiest counties. Notwithstanding its liberal aid to these poor counties, several are still unable to assume added financial responsibilities for hospital facilities, no matter how great the need.

The economic situation and the present maldistribution of physicians represent major health problems, in the solution of which it is hoped that physicians as individuals and in their organized societies can give assistance.

The cost of hospital and medical care has steadily advanced in recent years, for understandable reasons. Even in the past, however, the cost has been beyond the reach of a large segment of the population. Many factors have augmented this problem, and thus far it has not been solved.

Authorities advocate the extension of prepaid insurance to cover medical and hospital care. Such insurance is in force quite extensively in the urban and industrial areas, but a very small part of the rural, sparsely populated communities is protected with insurance.

The Medical Care Commission and the Duke Endowment each are contributing a dollar per day toward the hospital care of the medically indigent. However, many counties are unable to finance the remainder of the cost for these patients. The suggestion has been made that funds might advantageously be supplied by the state, county, and federal governments with which to finance to the necessary extent the prepaid medical care insurance of the medically indigent. Possibilities in this direction may merit further study.

Aside from the difficulties mentioned, the Commission recognizes that there is already a shortage of medical, nursing, and other personnel with which to staff the existing hospitals of the state. Recruitment and training of personnel to serve in the rural areas must be carried forward aggressively. A modern hospital structure fully equipped does not make a successful hospital until it is staffed with competent physicians trained in surgery and in other special branches of medicine.

The rural situation relative to medical care is of deep concern for all the people. In

general, they look to the medical profession for leadership and guidance in solving their medical problems. If organized medicine can contribute, in a substantial way, to correcting the unfortunate rural health conditions in North Carolina, it will win the lasting gratitude of the people.

JAMES H. CLARK, *Chairman*
N. C. Medical Care Commission

CORRESPONDENCE

To the Editor:

It would be deeply appreciated if you would print the following notice in your publication.

"The Veterans Administration has in its custody the majority of syphilis records of those Army personnel who were treated for this disease while in active service, and in many instances can procure informative data from the syphilis records of other than Army personnel. It is thought that many physicians treating veterans for syphilis as private patients would find a resume of the syphilis record useful since the details of treatment, results of spinal fluid examinations, and blood serologies are incorporated in the records.

Resumes of these records are available to physicians who are treating such veterans provided authorization for the release of the data is given by the veteran. Requests for the resumes accompanied by an authorization for the release of the data, dated and signed by the veteran, should be addressed to the Dermatology and Syphilology Section, Veterans Administration, Munitions Building, Washington 25, D. C. It is most important that the veteran's Service Serial Number and other identifying information, such as the date of enlistment, the date of discharge, rank, and organization be included.

Ordinarily, the resumes can be furnished in approximately two weeks from the date of the receipt of the request and signed authorization."

Sincerely yours,
PAUL B. MAGNUSON
Chief Medical Director,
Veterans Administration

To the Editor:

Since the publication of my article, "Better Health — Today and Tomorrow — Through Medicine," in the April number of the JOURNAL, Dr. George L. Carrington has pointed out that in addition to the factor of the good physical and medical care of the orphans, the difference between the low rejection rate for the graduates of orphanages and that of the state as a whole probably can be explained by the following facts:

1. Physically deformed and mentally unfit children are not enrolled in the orphanages.
2. The orphans attended school, and hence none were rejected for illiteracy.
3. The orphanage figures applied to white boys, whereas many Negroes were rejected because they were unsuited for the type of soldier needed in mechanized warfare.
4. If the 2,700,000 volunteers had been included in the draft statistics, the percentage of rejectees would have been reduced.
5. The correct medical care rejection rate was 9.92 per cent, of which 4.5 per cent were due to remediable defects.

Yours sincerely,
WILBURT C. DAVISON, M.D.
Durham

The general practice group must recognize as one of its responsibilities its duty to keep in constant and close touch with all the other sections. The members of the other sections in this way will be kept constantly aware of our changing needs. We must find out why we so frequently do not have our proportional representation in all organized medical activities. We must find out why our members of the general practice group do not attend the county medical association meetings and are not better acquainted with the current problems of the day, whether they be problems of administration and policy, or just run-of-the-mill work. For too many years the man doing general practice has been willing to let the specialty men do too much of the work of the county society. If the general practitioner wants privileges, he must be willing to do more of the work than he has been doing in the past.—E. A. Royston: The Section on General Practice: Its Problems, Its Goals, Its Responsibilities, California Med. 68:280 (April) 1948.

The health officer is humiliated, his prestige is lowered before the public when daily bulletins come to the press from the hirelings of philanthropy instead of from responsible officers of the United States Public Health Service, which is the only trustworthy source of reliable information of any . . . epidemic disease in its nation-wide aspects.—Haven Emerson: Whither the Pegasus of Public Health? New England J. Med. 238:684 (May 13) 1948.

BULLETIN BOARD

STATE BOARD OF MEDICAL EXAMINERS

The North Carolina Board of Medical Examiners will meet on July 22 at the Jefferson Hotel, Morehead City, for the purpose of interviewing applicants for licensure by endorsement.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Before a conjoint session of the State Board of Health and the Medical Society of the State of North Carolina in Pinehurst, Dr. Carl V. Reynolds, retiring State Health Officer, made his final report, covering the progress of public health in this state during his tenure of office. Among the accomplishments which Dr. Reynolds mentioned were:

Organization of the North Carolina School of Public Health at Chapel Hill.

An intensive campaign against venereal diseases, which placed this state in the forefront for the entire nation.

Procurement of the first Negro doctor ever employed by any State Board of Health, for full-time services, and the resultant expansion of health activities in behalf of the Negro population.

Experiments in the eradication of flies, as well as mosquitoes, through the use of DDT, thus setting an example for the entire nation.

Establishment of the School-Health Coordinating Service.

Erection of a new \$350,000 State Laboratory of Hygiene, the debt for which is being amortized by earnings from the Laboratory, together with the new farm as an adjunct to the Laboratory, which saves the people of North Carolina an estimated two and a half million dollars a year.

An increase in the number of local health units in the state from forty-seven to ninety-six.

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

The ninth edition of Zinsser's *Textbook of Bacteriology* has been prepared by faculty members of the Duke University School of Medicine, and will be released shortly. The revised text was written and compiled by Dr. David T. Smith and Dr. Donald S. Martin, with the assistance of Drs. Norman F. Conant, Grant Taylor, Joseph W. Beard and Henry I. Kohn, and Miss Mary A. Poston.

Dr. Ivan Brown has been appointed temporary assistant national medical and technical director of the national blood bank program of the American Red Cross. With his headquarters in Washington, D. C., Dr. Brown will fly to any section of the nation to advise and assist in work on local blood bank projects. National administrator for the work is Rear Admiral Ross T. McIntyre, former White House physician.

Dr. Brown was one of sixteen young doctors in America recently chosen to receive a \$25,000 cash award from the Markle Foundation. Purpose of the grant is to foster training and research in diseases such as cancer, heart disease, and infantile paralysis.

Dr. Robert W. Graves, professor of neurology, who has been a member of the faculty of the Duke University School of Medicine since 1936, has resigned to go into the private practice of neurology in Rome, Georgia.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Jerry Kazuo Aikawa, graduate of the Bowman Gray School of Medicine, and Dr. Kingsley M. Stevens, now an intern at the Baptist Hospital, have been awarded two of the fifteen post-doctoral research fellowships granted in the United States by the Atomic Energy Commission. Announcement of the grants was made by the National Research Council. Both will pursue their fellowship studies under the direction of Dr. George T. Harrell, Jr., head of the Department of Medicine, beginning October 1. Dr. Aikawa will study alterations in the distribution of body fluids in infectious diseases, using radioactive isotopes, and Dr. Stevens will conduct studies in the synthesis of protein by bacteria, also using radioactive isotopes.

Dr. David Cayer, assistant professor of medicine, has recently been elected to membership in the American Society of Clinical Investigation and the American Gastroenterological Society.

Dr. Wingate M. Johnson, professor of clinical medicine, was visiting chief in medicine at the Atlantic City Hospital during the last week in May.

Dr. Douglas M. Kelley, associate professor of psychiatry, was elected a Fellow of the American Psychiatric Association at its annual meeting held last month in Washington, D. C.

Dr. H. H. Bradshaw, professor of surgery, spoke on thoracic disease at the meeting of the American Thoracic Association in Quebec, Canada, May 29 to June 5.

Dr. Manson Meads, instructor in medicine, presented a paper on streptomycin at the meeting of the American Society of Bacteriologists held recently in Minneapolis.

A new cytological laboratory for the early diagnosis of cancer by the Papanicolaou method will be established at the Bowman Gray School of Medicine on July 1 by the Department of Pathology. It will be under the direction of Dr. C. C. Carpenter, dean of the school and professor of pathology.

Services of the laboratory will be available to other doctors and hospitals throughout North Carolina as well as to patients of the Baptist Hospital.

Construction of an additional floor over the west wing of the medical school building has been started to supply office and laboratory space for the new Institute of Tropical Medicine of the Bowman Gray School of Medicine. Construction of the new floor is being made possible through a gift of \$33,000 from a New York patron of the school.

The Institute, which has as its ultimate aim the development of a formal graduate school of tropical medicine, is directed by Dr. Thomas T. Mackie, head of the department of preventive medicine.

BOOK REVIEWS

The Acute Bacterial Diseases—Their Diagnosis and Treatment. By Harry F. Dowling, M.D., F.A.C.P., Clinical Professor of Medicine, George Washington University. With the collaboration of Lewis K. Sweet, M.D., Chief Medical Officer in Pediatrics and Infectious Diseases, Gallinger Municipal Hospital; Adjunct Clinical Professor of Pediatrics, George Washington and Georgetown Universities; and Harold L. Hirsh, M.D., Assistant Professor of Medicine, Georgetown University; Director of the Bacteriology and Immunology Laboratory, Georgetown University Hospital, 465 pages with 55 figures. Price, \$6.50. Philadelphia and London: W. B. Saunders Company, 1948.

The sound management of acute bacterial disease is based on a knowledge of the etiologic agent and underlying pathologic process, and a thorough understanding of the specificity and pharmacology of the new chemotherapeutic drugs. Standard medical textbooks have been outdistanced in many of these aspects by the recent rapid advances in this field. Dr. Dowling thus makes a very timely and thoroughly practical contribution in this volume—an authoritative and up-to-date analysis of reported as well as personal observations on the management of the acute bacterial diseases.

The subject is covered in four sections, each one concisely presented without academic detail and with important material further illustrated or emphasized by charts and diagrams. Part I includes a guide to a presumptive etiologic diagnosis through the differential consideration of common clinical signs. Details of supportive therapy, too often neglected, are fully covered, and the pharmacologic facts essential to the proper use of the major antibacterial agents—sulfonamides, penicillin, and streptomycin—are presented. A discussion of serum therapy at this point appears overemphasized, but reminds the reader of the important part played by the host's immune mechanism and its contribution to symptomatology and recovery from acute bacterial infections.

The subsequent sections are devoted to the individual diseases arranged according to etiology. The importance of specificity in both diagnosis and treatment is again stressed.

This excellent book provides unusually direct answers to the majority of diagnostic and therapeutic problems continually confronting the practitioner who is concerned with managing common bacterial diseases. Chapter references will aid those who wish to read the quoted reports in more detail.

400 Years of a Doctor's Life. By George Rosen, M.D., and Beate Caspari-Rosen, M.D. 429 pages. Price, \$5.00. New York: Henry Schuman, 1947.

Excerpts from autobiographies of physicians, both American and foreign, living and dead, are arranged in the following chronological divisions: Early Years; School Days; The Medical Student; The Practice of Medicine; Scientist, Scholar, Teacher; The Doctor Marries; The Doctor as Patient; The Doctor Goes to War; Writing and Politics; and Reflections on Life and Death.

This is a very readable book. The layman will find it interesting, and medical students and doctors will be stimulated by it to read the original autobiographies of the physicians included.

Calcific Disease of the Aortic Valve. By Howard T. Karsner, M.D. and Simon Koletsky, M.D., Institute of Pathology, Western Reserve University and the University Hospitals of Cleveland. 111 pages. Price, \$5.00. Philadelphia: J. B. Lippincott Company, 1947.

This monograph is based on a very exhaustive study of 200 cases seen at autopsy. Clinical, laboratory and autopsy reports on several groups of cases have been made previously, and divergent opinions concerning the etiology of calcific disease have been expressed. Finding what they feel to be unquestioned evidence of rheumatic involvement in 196 of the 200 cases, the authors of this monograph state their belief that this is the basic lesion, rather than arteriosclerosis. The painstaking study of the authors' 200 cases, along with a critical review of about 100 articles, makes this book the most comprehensive presentation of this subject yet available.

The tables and charts of data are clearly presented and the photographs are excellent. The material is arranged in logical order; verbosity is avoided and the text makes easy and enjoyable reading, each section being well summarized.

This monograph should prove of exceptional interest to internists generally, but above all to cardiologists and pathologists. Drs. Karsner and Koletsky are to be congratulated on their presentation of this important subject.

P-Q-R-S-T, A Guide to Electrocardiogram Interpretation. By Joseph E. F. Riseman, M.D., Associate in Medicine, Harvard Medical School; Instructor in Medicine, Tufts Medical School; Visiting Physician, Beth Israel Hospital, Boston, Massachusetts. 84 pages. Price, \$3.50. New York: The Macmillan Company, 1947.

This small book is not intended for the use of advanced students of electrocardiography. The common abnormalities are discussed and illustrated in brief fashion. The diagrams and drawings of electrocardiograms are clear and easily definable, and the few electrocardiograms reproduced by photography of actual records are likewise good.

This little manual will be of use to medical students, beginners in electrocardiography, and internists who own their machines and make their own records, but are not adept at interpreting them.

Classified Advertisements

DOCTOR WANTED

Doctor wanted to take over well-equipped, eight-room doctor's office with well-established practice in eastern North Carolina town of 3000 population. Modern hospital eighteen miles distant on hard-surface road.

Address "E"
P. O. Box 456
Winston-Salem, N. C.

ASSOCIATE WANTED

WANTED: A young or middle-aged eye, ear, nose and throat specialist as an associate in a well established practice.

Address replies to Box 292, Wilson, N. C.

BULLETIN BOARD

(CONTINUED FROM PAGE 320)

CARTERET COUNTY MEDICAL SOCIETY

The Carteret County Medical Society held its regular monthly dinner meeting at the Morehead City Hospital on May 10, with the hospital as host. Dr. J. W. Morris, president of the society, presided.

The meeting was given over largely to a discussion of the Blue Cross Hospital Saving Plan. The plan met the general approval of the society, except for the fact that there is no allowance for medical care of hospital patients, while surgery is covered. Dr. Morris explained that an effort is now being made to include medical fee coverage in the membership contract. It was also the sentiment of the society that there should be no such thing as two degrees of coverage; that there should be a single policy which would include complete coverage.

Some of the medical men mildly suggested that perhaps the Board of Trustees of the Hospital Saving Association was weighted too heavily with surgeons.

Reported by
N. THOMAS ENNETT, M.D.
Publicity Chairman

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

At the May meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on May 12, Dr. C. T. Smith presented "Observations on the Indiscriminate Administration of Sulfonamides and Penicillin."

Dr. J. C. Brantley, Jr., has been elected to membership in the society. Drs. R. M. Whitley, N. P. Battle, and W. K. McDowell have been appointed a committee to study the formation and function of a Board of Directors, which is to act as a clearing house for all new business.

NEWS NOTES

Dr. J. Cullen Hall has announced the opening of offices in Salisbury for the practice of obstetrics and gynecology.

* * *

Dr. Larry A. High is now associated with Dr. Sam Jones in Nashville.

* * *

Dr. Raymond M. Wheeler has announced the opening of offices in Charlotte for the practice of internal medicine.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY

The fourth annual national conference of the American Society for the Study of Sterility was held in Chicago on June 21 and 22.

FIRST INTERNATIONAL POLIOMYELITIS CONFERENCE

Twenty international medical and scientific authorities will present papers on poliomyelitis at the First International Poliomyelitis Conference, to be held in New York July 12-17.

VETERANS ADMINISTRATION

Dr. William Reid Morrison of Boston, Massachusetts, has accepted the post of chief consultant for surgery of Veterans Administration.

NEWS NOTES FROM THE OFFICE OF THE SURGEON GENERAL

Army's First Extensive Test of Chloromycetin Shows Encouraging Results

First reports from a United States Army test station recently set up at Kuala Lumpur, Malaya, on the most extensive experiment yet made with chloromycetin give strong indications that the recently discovered antibiotic, chloromycetin, may prove as effective against scrub typhus as was hoped.

INSTITUTE OF LIFE INSURANCE

The death rate from all causes among U. S. life insurance policyholders reached a new low in 1947 at 737.9 per 100,000, with declines shown for practically all causes of death including heart disease and cancer, the Life Insurance Association of America reports. The 737.9 rate compares with 773.1 in 1946 and 763.9 in 1942, the previous lowest rate. These results are indicated by the experience of companies representing 73 per cent of the ordinary and industrial life insurance policies in force in all U. S. companies.

NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

A handy 110-page report, containing the complete proceedings of the 1947 Annual Convention of the National Society for Crippled Children and Adults held last Nov. 2-5 in Chicago, is now available at the National Society's headquarters. The report, which carries out the convention's theme, "The Handicapped—A Great National Resource," includes speeches by some of the nation's leading specialists in education, rehabilitation and cerebral palsy who spoke at the four-day meeting.

Copies of the 1947 Annual Convention Report can be obtained from the National Society for Crippled Children and Adults, Inc., 11 S. La Salle Street, Chicago 3, Illinois, at \$1 each.

New Antiasthmatic

Isuprel, reported recently in medical journals as a new, potent preparation providing relief for bronchial asthma, is now ready as a prescription specialty in drug stores, Winthrop-Stearns Inc., has announced. It will be supplied as Isuprel Solution 1:200 for inhalation and in tablets of 10 mg.

Isuprel is unique among antiasthmatics for sublingual use, since its effect is produced quickly by placing a small tablet under the tongue and allowing it to dissolve.

Reports of clinical experiments made by Drs. Maurice S. Segal and John F. Beakey of the Boston City Hospital, Boston, Mass., published in *Annals of Allergy* July-August, 1947, indicated that the new drug is "very effective" in the treatment of bronchial asthma. Subjective relief is almost immediate and is "accompanied by significant increase in the vital capacity of the lungs," the two physicians reported. Rapid control of coughing is effected, and expectoration is made easier immediately following inhalation.

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THE EGO AND THE EYE

T. A. WATTERS, M.D.

NEW ORLEANS, LOUISIANA

The relation of the ego to the eye has always been a close one—so close that whatever disturbs the one affects the other. If the eye performs inadequately, even the mature ego suffers; and when the ego is distressed, the functions of the eye are often impaired. This fact is true largely because the ego uses the eye as an instrument for orientation and the assimilation of experience; and through the eye, the ego's desires and intimate thoughts are translated to others. It is not surprising, therefore, that the ego prizes sight above the other senses; and that, when it is seriously deranged, the whole world is out of focus and the ego fearful, bewildered, and confused.

The ego that must orient itself without the aid of sight is forced to construct a world so different as to be scarcely imagined. The blind, therefore, excite our pity, and we applaud without envy those sightless individuals who successfully compete with the sighted. The blind ego does not always accept its lot, however, and we find the strange paradox of Anton's symptom, where the ego completely denies the fact of blindness and describes in detail what it professes to see.

The Bond Between the Ego and the Eye

The bond between the ego and the eye can be traced in religion, literature, and art, where the eye is recognized for its aesthetic qualities, esteemed for its moral force, and held in awe for the sinister roles it plays in superstition.

In religion, much mention is made of this

organ, its good and evil potentials, and its supreme value to men and gods. In the Bible it had much to do with the fall of man, for the eye of Eve was tempted by the sight of the forbidden fruit, and at the serpent's suggestion she plucked it; while in Norse mythology Odin, the father of the gods, gave his right eye for wisdom.

In literature, the eye plays a prominent role, and examples abound. For instance, Shakespeare warns,

The error of our eye directs our minds,
What error leads must err. O! then conclude
Minds sway'd by eyes are full of turpitude.

In art, the depiction of the eye challenges the artist's best skill, and we readily read the meaning of the glance he paints. In superstition, the eye often insinuates itself as a malignant force, and many fear the look of an "evil eye." Even the symbol of the eye may inspire fear: the peacock feather, for example, which bears an iridescent eye, is thought to "bring bad luck"; this is likewise true of the cats-eye if worn as a gem. Some people fancy that the stars (the eyes of the sky) will affect their earthly lot with evil and benign rays. Not only man, but animals too are susceptible to the power of the eye: birds are paralyzed by the cold stare of the serpent, lions subdued by the eye of their trainer, and a savage dog by the eye of a country doctor.

The specific and purposeful uses of the eye in the various professions have often been described. Typical are the sceptical eye of the auditor, the photographic eye of the detective, the bold, roving eye of the travelling salesman, the cold, catching eye of the fortune-teller, the soliciting eye of the prostitute, the shifty gaze of the confidence

Read before the North Carolina Neuropsychiatric Association, State Hospital at Butner, Creedmore, North Carolina, October 31, 1947.

man, and the beneficent and understanding look of the physician. The eye, too, may bear the stamp of certain occupations—for example, the nystagmic eye of the miner, the buffeted eye of the pugilist, and the squinting eye of the watchmaker.

Even in sleep the eye accompanies the ego: in one dream the ego may watch itself in one or more roles, while in another dream the ego may feel itself being watched by the introjected eye of conscience, hovering about with threats of punishment.

The eye is bound to the ego by emotions which enter into all their mutual activities, these emotions dictating the quality of the eye's performance and rendering to the beholder the meaning it conveys. Thus we are able to read the language of the eye, which expresses the full gamut of human feelings—the curious peep, the gaze of bewilderment, the gleam of joy, the stare of horror, the glint of suspicion, the hostile glare, the furtive glance, the guilty look—a language which enters into all interpersonal relationships.

We consistently find in the thoughts and acts and works of man a close relationship between the ego and the eye—a relationship in which emotions, too, are always found, for they bind the two to mutual assistance. It becomes evident, however, that this combination needs the muscular system, because the ego must have delivered to it the confluence of the two objects beheld by the two eyes, and muscles are needed to perform this service. Thus the mechanism for looking and seeing transcends a single eye. It is a mechanism with several components, which, when functioning adequately with a mature ego, serves man wonderfully and well.

Evolution of the Visual Apparatus

A consideration of the evolution and development of this mechanism shows that, although sight is given priority over the other sensory functions, this has not always been true. We have evidence that smell formerly played a dominant role. When man stopped sniffing the ground, with its imprinted animal odors and deposits, and assumed the upright position, this change in posture gave him a wider view and more distant sight. Merging of the visual axes into a single field of binocular vision added the advantages of depth and dimension; and as the hands acquired greater skills, man's

near vision improved so that he was able to see objects closer and in more detail. So sight was developing while smell was being repressed.

Though seeing reached a high degree of efficiency, possibly its upper limits of functional capacity, man's environment forced an elaboration of perception through the use of visual symbols, and later verbal symbols, and finally conceptual symbols which, through association, enormously increased his capacity for adaptation. Evolving, too, were greater possibilities for testing and retesting actuality through his muscular system, which ultimately gave way to thinking as a shortcut and efficient substitute. Thus, with a means of better dealing with reality, the ego had a greater range and variety of techniques for relating itself to its environment and to time, for drawing on past experience, for learning, and for knowing.

Necessity for Studying the Eye in Relation to the Whole Organism

When we recognize the visual apparatus as a complicated mechanism with two receptive devices (eyes), a highly complex set of processes constituting the integrative function, effectors and a synchronizer through the use of muscles, it becomes evident what the ego has for its use in the looking-seeing-integrating mechanism. It is something that, to be studied accurately, demands full consideration of its complexity as a total mechanism, and not mere observation of the eye torn out and studied singly and alone. It is a mechanism that works or does not work on the basis of the ego's wish-to-look-or-see, or its wish-not-to-look-or-see; or its wish-to-be-seen, or its wish-not-to-be-seen. In addition to the *wish-to-see*, there is also the matter of *what* or *whom* the ego wishes to see, or *by whom* it wishes to be seen; *why* it wishes to see or be seen; *how* it wishes to see or be seen, or the reverse. Thus there is a concatenation of the positive or negative wish with the associated conditions of seeing or looking.

In seeing or in having seen, the ego may meet or may have met with frightening or threatening, enraging or equivocal experience which it cannot adequately master—the result being the development of anxiety, hostility, guilt, doubt, fear of loss of love, fear of punishment, or even punishment itself—these emotional reactions disturbing the

mechanism in its orderly function. Obviously, a careful study of the individual case, with a persistent realization that the eye accompanies the ego on its dynamic journey through early life, with its struggles against dependency, with the oedipal problem, with sibling rivalry and its consequent frustrations, is mandatory. In the ego's life-story and struggle with its conflicts may lie the secret of its selection of the site and symptom of disorder; and only from an appraisal of its strength and integrative capacity can one predict the success of a therapy calculated to help it mature and master its difficulties.

Components of the Looking-Seeing Mechanism and Their Disorders

Involvements of the looking-seeing mechanism are numerous and varied, and any attempt to group or classify them will have its limitations. To be without some sort of grouping, however, would only add to the confusion, so I have chosen one based on the main functional components of the mechanism, which has as its model the reflex arc.

The receptive component

The receptive component is composed of the eyelids, which shut out light, and in extreme conditions, with the aid of the muscles of the face, can increase the area of vision; the tear glands and ducts, which in conjunction with the lids moisten and wash the cornea; the eyeballs proper, with their functional elements such as the cornea and the intrinsic muscles which control illumination through the iris and bend the light rays with the lens, thereby optimally illuminating and placing the images upon the sensory plates (retinae). From these sensory plates impulses are transmitted over well known channels, through primary ganglia, on to the cortex to be fused into a single image and corrected as to relationship in space; then on through association paths to the frontal cortex, to be pooled with other sensory material from reality and elaborated through association.

The main disorders of this component are lachrimation, suppression of tears, congestion, twittering of the lids, blinking, closed eyes, eye rubbing, squeezing of the lids, blepharospasm, corneal anesthesia, photophobia, amblyopia, color-blindness, reversal of color fields, hemianopsia, concentric or spiral and tubular fields, weakness and paralysis of ac-

commodation (asthenopia), monocular diplopia, ptosis, and myopia. Disturbances of the peripheral fields, of binocular vision, and of accommodation are especially frequent, probably because these are more recently acquired functions and are in closer relationship to the conscious ego, whereas the central fields and monocular vision are more closely related to the unconscious. We recognize in neurotics a high incidence of disorders of sleep and often a difficulty in falling asleep, during which interval the drowsy ego indulges in day-dreams or the working over of material in an effort to master its problems. Under these circumstances, binocular vision, as a result of disturbances of fusion, becomes disordered and breaks down in the direction of more primitive monocular sight. It is known that the eyeballs during sleep are rolled upward and outward, reminding us of the position of the eyes when they reported as individual organs to a primitive ego as the organism sniffed the ground. The connection between the ego and binocular vision is a vulnerable one and therefore easily becomes disordered.

The following cases illustrate disorders of this component:

Case 1

A 41-year-old wife suppressed her tears for the four years that her husband was depressed; then, upon his recovery and return to work, she developed congestion of the conjunctiva, frigidity, and pruritus vulvae. She felt that to cry would indicate weakness and show that she was upset, but the suppression of tears was really a cover-up for a sense of guilt about loving him differently, because of an attitude of pity and because of resentment over the fact that he had hurt her pride by talking about masturbation so frequently while depressed. Thus we see the suppression of tears as part of the ego's wish-not-to-be-seen and not to have its real attitude and emotions detected.

Case 2

A 22-year-old man who was subject to almost constant tearfulness, but without any muscular components of crying, had strong shame feelings about practicing fellatio from the age of 9. There was a strong need to be pitied and shamed.

Case 3

A 29-year-old engineer, stationed in a small, isolated spot during the war, had inadvertently seen his lady-love and her husband, unexpectedly home on leave, having intercourse. The following day the husband became psychotic and was sent to a hospital, while the patient, thrown into a jealous rage and panic, wished not-to-have-seen the incident, and through guilt and punishment developed total amblyopia.

Case 4

A woman who saw her mother and two children torn practically out of her arms by a careening taxi-cab and crushed before her eyes developed extremely limited vision—the wish-not-to-have-seen.

Case 5

A drug clerk with a latent squint, in using the chosen eye, made a mistake in filling a prescription containing veronal. The medicine was prescribed by a physician whom she blamed for her mother's suicidal attempt with an overdose of this drug prescribed by him. Confused by the memories associated with veronal, she reached instead for the adjacent bottle of phenol and substituted it. When the error was detected and she was reprimanded by the physician, she developed strabismus and monocular amblyopia⁽¹⁾.

The integrative component

The integrative component is made up from potentials of the highly developed neurologic functions of the cortex—more specifically, the frontal lobe. Here the visual impulses, bringing in material from reality, come into relationship with other sensory impulses and the resources of memory. In addition there are impulses coming from the inner reality or deep drives of the organism, which must be synthesized with the material from outer reality.

The integrative component makes possible the relation, recognition, correlation, grasp, synthesis, and interpretation of data, and gives to the ego not only an awareness of itself but the means to select among alternatives and to evolve a plan, and the executive ability to carry it through if it sees fit, either by thinking or by use of its channels for effective action. It is in the observation of this component that we gauge the ego's strength and integrative capacity. If the ego is weak or intoxicated and therefore unable to deal adequately with its tensions, these tensions then are absorbed within the component itself, mobilizing through regression primitive, magical, or prelogical techniques; or they are absorbed within the receptive apparatus, too, causing projection of visual images; or they are absorbed within the muscular system, producing various attitudes and postures, with associated stares and gazes.

Cases 6 and 7 illustrate disorders of this component:

Case 6

A 30-year-old octaroon with bromide intoxication came to the hospital with lilliputian hallucinations, admitting after a considerable time that the projected image was a diminutive white man walking along the cornice of the ceiling. This micropsia later turned out to be her defense against this person—reducing his size and keeping him at a distance.

Case 7

A 40-year-old white woman in a schizophrenic psychosis had repeated hallucinations of a gigantic Negro man trying to come through her window. Later material revealed the presence of very strong sexual impulses against which she defended herself by macropsia.

Looking and seeing may early become sexualized, and at certain points in the ego's history may become fixated by repression or limited by inhibition as a result of experience which the ego cannot assimilate. Consequently, we may have disorders when the ego has seen something it wishes to see again to remove doubt, or something it wished not to see, and wishes to see again to reassure itself that it had not seen what it thought it saw the first time.

Case 8

For example, a voyeur, married and the father of three children, demanded that his wife go with him to share the experience of peeping—this to reassure himself he did not see what he thought he saw at an earlier age.

Case 9

Similarly, an exhibitionist, one week before his marriage and on the eve of graduation, exposed himself to some little girls to reassure himself somehow that he was not, by the hands of his father, like them. The ego was seeking to find in real experience reassurance against a phantasied threat in childhood.

The synchronizing component

The synchronizing component is made up of the extraocular muscles, which serve convergence and conjugate movement to bring the sensory plates and their fields into conjoined relationship to the object. This component (except in defensive movements through lower circuits) works essentially through directive impulses from the cortex which descend into the mid-brain and pons, where patterns of discharge from nuclei activate the eye muscles and those of the neck and spine.

Disturbances of this component are paralysis of conjugation, fixations or limitations of conjugate movements or of gaze, latent heterophoria coming out under tension, diplopia, torticollis, habit spasms, and tics. Essentially a motor component, it is involved when looking or not-looking is of special significance to the ego, or when the component becomes the carrier of aggressive, fearful, guilty attitudes on the part of the ego toward the beholder. It is particularly apt to be involved when the ego is weak and has regressed, thus releasing primitive emotions which pervade the muscular system—such emotions as panic, horror, rage, and hate,

1. Watters, T. A.: *Emotional Factors in Disease*, New Orleans M. & S. J. 92:118-125 (Sept.) 1939.

which occur in homosexuals, catatonic-schizophrenics, epileptics, and paranoids, respectively; or in the vacant or fanciful stare of the deteriorated ego; or the stare of profound and prolonged anxiety as seen in the goiter patient; or the gloating and usually dry eye tense with the hope for an opportunity to strike back in revenge, as seen in glaucoma. Too, this component is especially given to individualized expressive movements, because the ego not only looks at, or away from somebody or something, but may also deny or affirm what it sees with the same muscles.

Compensatory symptoms also occur, such as headache, nausea, and vertigo usually resulting from efforts made to correct disturbances of the vestibular eye muscle combinations, and may or may not be used by the ego.

The following cases illustrate disorders of this component:

Case 10

A case of paralysis of convergence developed in a 36-year-old woman, a homosexual, whose mother was dependent on her to run a summer hotel, and whose girl-friend was the mother's assistant. When summer approached, she was forced to look forward to going to the hotel at the expense of leaving her own business at the most profitable time of the year. Furthermore, going there would force her into a painful dependent homosexual relationship with her girl-friend, the assistant. Thus things faded out of focus when she read or looked at her mother's letters of supplication.

Case 11

A 27-year-old amateur soprano, married and physically responsive to her husband, but susceptible to her minister, although morally strict, experienced difficulty in convergence following an incident in church. As she was singing one Sunday, an old gentleman, unduly sensitive, made an abrupt exit through the window. Subsequently, when the minister suggested that her singing was displeasing to his congregation and asked her to withdraw as soloist, she developed burning and blurring of vision with an "unwillingness to see."

Case 12

A 44-year-old automobile mechanic, married, and devout, was referred because of double vision. A careful study revealed that he had been counseled by his spiritual adviser to beat his wife for sexual indifference and unwillingness to have intercourse without a diaphragm. Smelling alcohol on his adviser's breath, he became doubtful and was tempted to continue the practice of birth control. Under this strain he developed double vision. After more material had been obtained, it was pointed out to him that the real difficulty was in his failure to deal with his wife in a really masculine way. When he achieved a more masterful approach to her, the problem blew over, and with it the double vision. The problem was one of the ego taking a double view of its conflict.

Case 13

A 32-year-old man planned a pre-dawn rendezvous

with his brother-in-law for a turkey hunt. Upon approaching the mutually agreed upon spot, he heard a turkey call and saw a movement in the underbrush, whereupon he aimed his gun and fired it. The call had been made by his brother-in-law rather than a turkey, and the patient was suddenly confronted with the sight of his brother-in-law, fatally injured. He put him over his left shoulder and hurriedly carried him to his sister's home. Although exonerated by the court, the patient developed a torticollis and conjugate deviation to the right. Only after considerable study was it finally discovered that he harbored a grudge against his brother-in-law, blamed himself for the accident, and avoided looking at his crime by turning his head and averting his gaze. His symptoms subsided when his ego dealt realistically with the guilt.

Case 14

A 25-year-old divorcee, professing to be happy and denying any conflicts or frustrations whatsoever, showed, in addition to eye symptoms, general limitation in all movements with little, if any, spontaneity; yet her blood pressure was 152 systolic, 90 diastolic. Her symptoms came on when her divorced father began showing interest in a young woman near her own age. Prior to that time she had enjoyed an interval of close association with him, following his divorce from her alcoholic mother, after years of quarrels which she witnessed, and following her own divorce from her husband. The symptoms increased when her father finally married. The patient resented the money and attentions lavished on her stepmother, and the liberal alimony and comfortable apartment provided for her own mother. Forced to live frugally on an inadequate salary in a small, second-rate apartment in a Bohemian atmosphere, she remained to herself. Her father contributed to her expenses and maintained her son in a fine private school, but in contrast to what the other two women had, it was not enough. With a little effort she could have bettered her circumstances, but instead she accepted them with a growing intensity of symptoms which finally brought her to the ophthalmologist. Thus forced to share her father with two other women, she kept her increasing hostility under choke. Gradually, however, the hostility, aside from effecting hypertension, suffused the seeing mechanism, where its discharge towards her two rivals was withheld lest it weaken her position still further.

Most of the cases which have been reported were carefully studied by the ophthalmologist before being referred to the psychiatrist. In some of these cases it is clear that conversion plays a predominant role; in others, involvement of the looking-seeing mechanism occurs on a different basis—for example, hallucinations; whereas in still another the involvement is more fundamentally part of a vegetative neurosis, such as glaucoma. All in all, we find that patients with disturbances in the looking-seeing mechanism warrant a careful study by the ophthalmologist for psychogenic factors, and that the psychiatrist to whom they are referred should appreciate the intricacies of this mechanism when it is used in the service or disservice of the ego.

Conclusion

I have brought before you the relationship of the ego and the eye, bound as they are by the emotions, and sharing literally and symbolically the story and struggles of life. It was shown that, with the passage of time, the eye, through the development of its functional capacity, paved the way for the higher integrations of thinking and knowing which serve the conscious ego of modern man. The eye enters into all of his works and creations at all times, for it not only gives expression to the deep drives and dynamics of his unconscious, but also to the noble and ignoble motives of his ego. The eyes cannot be torn apart from the ego and studied separately therefrom, regardless of what the presenting disorder may be; for the ego holds them in highest regard, and its relationship with them is a close one—the combination working as a unit. A detailed study of this unit reveals a complex mechanism for seeing and looking with an integrating component, all working together, each component demanding consideration of the other components, if there is to be accurate appraisal of any one or any combination.

In this looking-seeing mechanism the psychiatrist finds signals, codices, and manifestoes which he may follow from day to day in his contact with the patient, for they not only portray and reveal diagnostically, but they, too, foretell prognostically the ego's grim struggle against distress and disorder—with what success and what satisfaction.

It has been well said by a keen observer of human nature:

"Eyes speak all languages. They wait for no introduction; ask no leave of age or rank; they respect neither poverty nor riches, neither learning nor power, nor virtue, nor sex, but intrude, and come again, and go through and through you in a moment of time."⁽²⁾

1508 Pine Street

2. Emerson, Ralph Waldo: Essay on Behavior, from The Conduct of Life.

Our research has not scratched the surface of such problems as heart disease and coronary thrombosis, nephritis, arthritis, and cancer. We know more about the planet Mars than we know about the pathogenesis of arteriosclerosis which is probably the least common denominator of most of the disabilities of the aging process.—Theodore Klumpp: The Future of the Older Worker, *Geriatrics* 2:165 (May-June) 1947.

INDICATIONS FOR NEPHRO-URETERECTOMY

With Illustrative Cases

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and

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CHARLOTTE

We feel that this subject is a timely one to present to a general surgical group because of its wide appeal and limited application. All practitioners of medicine have seen bad results follow a conservative nephrectomy in cases where a more radical procedure was indicated and should have been performed.

The importance of a careful preoperative examination in every case in which nephrectomy is being considered cannot be over-emphasized. Nephro-ureterectomy is not used frequently, but there are definite indications for its use. Failure to employ this procedure when indicated can have serious consequences.

The first continuous nephro-ureterectomy was performed by Dr. Howard A. Kelly in 1895, and the first two-stage operation was described by Drs. Kelly and Lilienthal in 1911. The operation never really became popular or was considered a necessity until Dr. Edwin Beer read his epoch-making paper before the American Urological Association in 1921, at which time he pointed out the necessity for such radical surgery in certain cases.

Conditions in Which Nephro-Ureterectomy Is Indicated

For many years urologists have recognized that some diseased ureters should be excised as low down as possible. During the past few years the entire ureter with the kidney has been removed with increasing frequency, especially in that group of cases where the urologic surgeon is not sure that obliterating fibrotic atrophy will take place.

Nephro-ureterectomy is the only radical operation which offers a chance for cure in the following well-defined lesions of the kidney and ureter⁽¹⁾:

(1) Papillary growths of the kidney pelvis or ureter

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

1. Beer, Edwin: Further Experience with Aseptic Nephro-Ureterectomy, *J. Urol.* 29:135-140 (Feb.) 1933.

(2) Tuberculosis of the kidney with marked stricture formation at the lower end of the ureter associated with a dilated, large, thick or thinned-out ureter (empyema)

(3) Hydro- or pyo-uretero-nephrosis due to intrinsic or extrinsic obstruction at the lower end of the ureter, such as

- (a) Firmly impacted stone
- (b) Ureteritis cystica
- (c) Cysts
- (d) Dilated ureteral orifice

Technique

The terms nephro-ureterectomy and ureteronephrectomy are not synonymous, although the end result is the same, the kidney and ureter being removed intact. In nephro-ureterectomy the kidney is removed first and remains attached to the ureter; in ureteronephrectomy the ureter is removed first. In ureteronephrectomy, if for any reason the operation has to be discontinued, the kidney is left in place with a cut ureter to drain it. In nephro-ureterectomy, if the operation cannot be completed, one leaves the ureter without any urinary drainage. In all 5 of our cases nephro-ureterectomy was the method of choice.

In nephro-ureterectomy the kidney is removed through a loin incision and the ureter bluntly dissected free down to the common iliac vessels. Care must be used in this dissection to prevent tearing of the ovarian or spermatic vessels. At this point one can either exteriorize the kidney (leaving it attached to the ureter) and close the loin incision, or push the kidney and ureter down to the depth of the wound and leave the incision open. Next the patient is turned so that a muscle-splitting incision can be made in the lower quadrant to free the ureter down to the bladder through an extra-peritoneal approach. The ureter is then clamped and ligated at the bladder. If the kidney was put in the depth of the wound it is now brought out through the lower quadrant incision with the attached ureter, and the patient is turned back so that the loin incision can be closed. We prefer this method when the ureter is greatly dilated, as in cases 1 and 4. If the loin incision was closed before making the lower quadrant incision, the ureter is pulled out through the loin incision after it has been freed below. This method is preferable if the ureter is of normal size. In cases where the ureteral meatus is involved by the disease, it may be necessary to resect a cuff of bladder around the meatus.

Case Reports

The following cases serve to illustrate the indications for nephro-ureterectomy.

Case 1

A white female, 41 years of age, had a history of pain in the left side and episodes of chills and fever since childhood, with an associated pyuria. When she was 10 years old, a left nephrectomy had been advised.

The physical examination revealed normal findings. A culture of urine from the left kidney and bladder contained *Aerobacter aerogenes* and *Bacillus pyocyaneus*. Urine from the right kidney was negative. An intravenous phenolsulfonphthalein excretion test revealed a 4 per cent output in twenty minutes from the left kidney, with an appearance time of fifteen minutes. Blood counts and nonprotein nitrogen were normal.

An intravenous urogram revealed a non-functioning left kidney and a normal right ureter and kidney. A left retrograde pyelo-ureterogram revealed a capacity of 500 cc., with a large megalo-ureter and hydronephrosis.

A nephro-ureterectomy (fig. 1) was done, and the patient was discharged on the tenth postoperative day with an occasional white blood cell in the urine and a negative urine culture. The follow-up study revealed a complete cure.

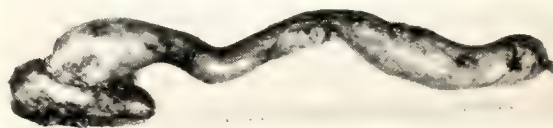


Fig. 1 (Case 1). Gross specimen removed in toto.

Case 2

A 53-year-old white female gave a history of pyuria, chills, fever, and pains in the left kidney for ten years prior to admission. She had seen many doctors, and at one time was thought to be psychotic, since no organic trouble could be found. On admission she was having fever spiking to 104 F.

The physical examination was not remarkable except for obesity. The nonprotein nitrogen was 45 mg. per 100 cc. Intravenous urograms revealed a minimal hydro-ureter and hydronephrosis on the right, and no function on the left side.

An intravenous phenolsulfonphthalein excretion test showed no function from the left kidney. Cystoscopy revealed a chronic cystitis (grade 2) and 500 cc. of urine in the left ureter and kidney (fig. 2). Culture of this urine contained *Bacillus coli*. Blood counts showed a hemoglobin of 77 per cent, 3,950,000 red blood cells, and 8000 white blood cells.

Despite the use of streptomycin and penicillin the patient continued to run a spiking fever. After six days of unsuccessful medical therapy, a nephro-ureterectomy (fig. 3) was performed. For the first three postoperative days the patient had occasional rises of temperature to 101 F. After this period convalescence was normal except for a slow healing of the wounds. She was discharged on the sixteenth postoperative day in excellent condition. The wound in the lower left quadrant did not completely heal until about one month following the operation, and from then on the patient had no further trouble.



Fig. 2 (Case 2). Retrograde pyelogram showing a greatly dilated ureter.

Case 3

A 36-year-old man was seen in February, 1946, because of painless hematuria. Examination at that time revealed a healed duodenal ulcer and a tumor of the bladder. The tumor was resected and a pathologic report of papilloma of the bladder was given. The histologic appearance was suggestive of a low-grade malignancy. Urograms at this time were normal.

The patient was admitted to the hospital again in July, 1946, and in February, May, and September, 1947, for recurrences of the papilloma in the bladder. On each admission intravenous urograms showed the upper urinary tract to be normal. He was treated with fulguration of the papillomas, deep x-ray therapy to the bladder, and stilbestrol. A biopsy made in September was reported by Dr. Paul Kimmelstiel as follows: "Papilloma of bladder. After careful consideration I have not been able to convince myself of any definite evidence of malignancy in the specimen submitted."

About November 1, 1947, the patient began to have some pain in his left kidney, and a retrograde pyelo-ureterogram revealed a picture compatible with a tumor of the left renal pelvis and lower left ureter. This study was repeated on February 1, 1948, and a definite diagnosis of tumor of the left renal pelvis and ureter was made. On March 6, 1948, a nephro-ureterectomy was performed. Convalescence was normal, and the patient was discharged on the ninth postoperative day.

It will be of interest to see whether the bladder tumors recur after nephro-ureterectomy, as Dr. Edwin Davis has reported the disappearance of bladder tumors following ureterosigmoidostomy. It may be that the urine from the left kidney contained a carcinogen or that the bladder tumor represented implants from the left kidney, although the



Fig. 3 (Case 2). Gross specimen removed in toto.

bladder tumor was present about two years prior to x-ray evidence of the tumor in the renal pelvis.

Case 4

A 10-year-old boy was admitted to the hospital in 1930 with a history of complete urinary retention two years previously, at which time external urethrotomy was done at a local hospital. Examination on admission revealed an emaciated 10-year-old boy with high fever, bilateral epididymitis, and a draining perineal sinus. The nonprotein nitrogen was 55 mg. per 100 cc., red blood cells 4,000,000 and white blood cells 12,000.

Soon after admission to the hospital a cystotomy was done and the urethral valves were cut. Purulent material could be seen coming from the left ureteral orifice.

The postoperative convalescence was very stormy because of the severe widespread infection. Sulfonamides and penicillin were of course not available at that date. A cystogram revealed reflux of the opaque media up the left ureter, showing a greatly dilated ureter and a pyonephrotic sac instead of a kidney. The right kidney showed hydronephrosis (grade 3) and hydro-ureter (grade 2). Three weeks after the first operation a nephro-ureterectomy was done on the left side, with a less stormy convalescence.

This patient lived from 1930 until 1948 (eighteen years) on one kidney, which was about three fourths destroyed when we first saw him.

Comment: It is truly remarkable to observe the small amount of kidney tissue on which a patient can survive, apparently in good health.

Case 5

A 55-year-old colored man was admitted to the hospital with a history of gross painless hematuria of six months' duration. General physical examination was not remarkable. Cystoscopy revealed a normal bladder with blood coming from the left ureteral orifice. A retrograde pyelogram showed a filling defect (fig. 4) in the lower and middle calices of the pelvis. A tentative diagnosis of papillary carcinoma of the renal pelvis was made at that time. A repeat pyelogram was done one week later to see if the filling defects described above were constant. Since it showed no change, we concluded that the defects most probably were due to a pelvic neoplasm rather than a blood clot.

A nephro-ureterectomy was performed, and section of the kidney revealed a hypernephroma in the parenchyma, with only blood clots in the pelvis and lower calices (fig. 5).

Comment: This case has two important features. First, the pyelogram gave no clue (such as pressure on the caliceal system) to a parenchymal lesion. Second, a blood clot remained for at least a week in the kidney



Fig. 4 (Case 5). Retrograde pyelogram shows a filling defect in the lower and middle calices of the kidney pelvis.

pelvis and produced an identical filling defect on two pyelograms made a week apart.

If a correct pre-operative diagnosis had been made, we would have done only a nephrectomy, since a hypernephroma very rarely spreads by implantation.

Summary

The modern technique for performing nephro-ureterectomy is given and indications for the procedure are outlined. The importance of performing the operation in cases where it is indicated is stressed. Five illustrative cases are reported.

Discussion

Dr. Fred Garvey (Winston-Salem): Not only general surgeons but urologists as well have been guilty of removing a kidney when the pathologic condition existed in the ureter. I think the most important thing Dr. McKay brought out is the necessity for making a complete diagnosis of conditions involving the kidney and ureter. When just a retrograde pyelogram is done and the catheters are not withdrawn, a pathologic condition in the ureter is often overlooked. Intravenous pyelography is often inadequate, because this technique rarely shows the ureters unless there are definite obstructions of the lower ureter which would cause filling.

I am reminded of 2 or 3 cases I have seen which bring this point home to me very forcefully. One was a case of primary ureteral tumor which was



Fig. 5 (Case 5). The tumor can be seen in the upper pole of the kidney.

producing hematuria. The bleeding was seen to be coming from the ureter on that side. Although a pyelogram showed nothing very definite, the kidney was removed and was found to be normal. Nothing further was done, and the patient eventually had a metastasis from a primary tumor of the lower ureter, with fatal results.

In another patient with megalo-ureter, a congenital condition, nephrectomy without ureterectomy was performed. Infection and hydro-ureterosis followed, and the ureter eventually had to be removed.

The latest example I have seen is a case in which a nephrectomy was done a little more than a year ago for a stone. The stone was in the lower ureter at the time, and apparently a marked ureteritis was present. The patient ran fever and had constant pain in the right lower quadrant, with an accompanying hemolytic anemia, for a year. This anemia may have been on the basis of the chronic infection. The ureter was removed, and the patient had no more fever or pain. We have been led to believe that a stone in the lower ureter becomes silent after the kidney has been removed. In the average case this sequence of events will occur, but every now and then, as in this case, the stone produces an empyema and surgery must be instituted.

This paper by Drs. McKay and Baird reminds us all to be a little more careful in our urologic diagnosis and to be sure that the ureter is not the seat of the trouble, particularly in tumors of the renal pelvis and bladder. Where there is any doubt, a complete ureterectomy should be done.

I agree with the authors that nephro-ureterectomy is preferable to ureteronephrectomy. If, after the ureter has been cut in the latter operation, we find some anatomic or other reason that the kidney cannot be removed at this stage, the ureter is left to drain somewhere from a kidney that is still functioning. Consequently there is no question in my mind but that nephro-ureterectomy is the better approach in removing the kidney and ureter.

SALMONELLOSIS DUE TO SALMONELLA OREGON

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Bacteriologic and serologic studies on patients infected with the rarer types of *Salmonella* are still needed. They hasten the clinical application of the newer facts regarding this group of organisms, and extend our knowledge concerning the geographic distribution of the various types. Because of the comparative rarity of the organism, a case of human infection with *Salmonella oregon* is presented.

Case Report

A 67-year-old white male farmer was admitted to the urologic service of the North Carolina Baptist Hospital on August 8, 1947, with symptoms suggesting obstruction of the vesicle neck.

There was no history of nausea, vomiting, gaseous distention, colic, jaundice, hematemesis, diarrhea, constipation, melena, or change in stool character. Hemorrhoids had existed since childhood.

Physical examination on entry revealed a well developed, well nourished elderly male. The only positive findings were diffuse prostatic enlargement and external and internal hemorrhoids. Cystoscopy showed a large, transitional-cell carcinoma of the bladder, which was fulgurated.

On the patient's thirty-sixth hospital day his temperature spiked to 102 F. and he complained of headache, cramping pain in the lower abdomen, and multiple watery stools. These symptoms continued until September 30, and were accompanied by occasional bouts of nausea and vomiting. A stool culture on September 14 yielded *S. oregon*. Urine cultures contained coliform bacilli and streptococci. At no time during his sixteen-day period of diarrhea did the patient pass any blood per rectum. Occasionally small amounts of mucus were observed. The number of stools varied from four or five a day to movements every thirty minutes.

Soon after the onset of symptoms a five-day course of sulfadiazine, totaling 30 Gm., was given without observable clinical effect. The diarrhea ceased abruptly on September 30, and subsequent stools were well formed and normal in number. No pathogens were cultured from repeated stool examinations after September 30, 1947. Agglutination tests run on a serum specimen collected on October 6, 1947, were positive with typhoid-H antigen in a dilution of 1:320, and positive with paratyphoid-B-H in the same dilution.

No other cases or carriers of *Salmonella* were detected in the patient's ward. Stool cultures done on one patient who complained of two episodes of diarrhea showed *Proteus morganii*.

Questioning revealed that the patient had always eaten at home, and that no other members of his family had had diarrhea or other gastrointestinal

disturbances. Toilet facilities consisted of an outside privy located approximately one hundred yards from his house. His water supply came from a natural spring situated on the crest of a hill definitely above the privy site. Circumstances did not permit bacteriologic or serologic studies on the patient's family or contacts.

Discussion of Bacteriologic and Serologic Aspects

An organism having the characteristics of *Salmonella* was isolated from a stool specimen sent to the clinical laboratory. The organism was referred to the enteric laboratory of the Department of Bacteriology. It was found that a suspension was agglutinated in polyvalent *Salmonella* serum, in serum for group C2, and in serums for the flagellar antigens d and the complex 1, 2, 3 . . . The strain was identified as *S. oregon*, VI, VIII: d-1, 2, 3 . . .

The serologic aspects of this case presented certain points of interest. Agglutination tests on a specimen of serum secured twenty-three days after the onset of the illness revealed a high titer of antibodies for the patient's own strain of *Salmonella* and also for standard typhoid-H and paratyphoid-B-H antigens; no antibodies for typhoid-O, paratyphoid-A-H, or *Brucella* or *Proteus* OX-19 were demonstrated. When the serum was tested with suitable antigens, it was demonstrated that O agglutinins for *Salmonella* antigen complex VI, VIII were present in a dilution of 1:40. The serum did not agglutinate bacterial suspensions containing only phase 1 flagellar antigens of paratyphoid-B. It did agglutinate suspensions representing antigen complex 1, 2, 3 . . . corresponding to phase 2 of *S. oregon*. Control studies made it evident that the agglutination of paratyphoid-B-H antigen observed in routine tests was due to the presence of phase 2 bacilli in the antigen suspension. This finding would be fully explained by the assumption that the commercial paratyphoid-B-H antigen used was prepared from a diphasic culture. It is possible that in other instances the unexplained appearance of paratyphoid-B-H antibodies in serums may be due to the presence of this phase 2 component in the antigen suspension.

The serologic characteristics of *S. oregon* were elucidated by Edwards⁽¹⁾, who demonstrated its close relationship to *S. muenchen*

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1. Edwards, P. R. and Bruner, D. W.: Two New *Salmonella* Types Closely Related to *Salmonella* Muenchen. *Am. J. Hyg.* Sect. B 34:121-124 (Nov.) 1941.

and *S. manhattan*. The bacteriologic characteristics were reported by Kauffmann⁽²⁾, but present nothing distinctive from the majority of *Salmonella* types. He found that one strain tested was positive in the Stern glycerol test, while the other was negative. There were differences also in the rate of action on d- and i-tartrates. The strain isolated here was glycerol-negative; tartrate reactions were not tested.

Distribution and Occurrence of S. Oregon

Edwards⁽¹⁾ described this type of *Salmonella* originally on the basis of one culture isolated from a turkey in Oregon by Dickinson and five cultures isolated by Rubin from mesenteric lymph glands of apparently normal hogs. It has since been found in a variety of sources and with a wide geographic distribution. It is known to occur in Mexico⁽³⁾, Oregon, Kentucky, Uruguay, Massachusetts, California⁽⁴⁾, the Mediterranean area, New York⁽⁵⁾, Connecticut, Illinois, Panama, Florida, and Maryland⁽⁶⁾. It has not been reported in Asia or Australia, and its occurrence in the Mediterranean area of Europe and Africa might well be simply evidence of the presence of carriers among American troops.

Apparently as many as sixty strains have been isolated from man. At no time has *S. oregon* been isolated from patients with illness of the enteric-fever type, nor with the septic type of disease frequently produced by *S. kunzendorf*. The only instance of extra-intestinal localization of *S. oregon* was reported by Varela⁽⁷⁾, who found it in 1 of 185 pairs of tonsils excised from children. At least 7 carriers have been reported⁽⁸⁾. Cases of gastroenteritis in man have yielded more than fifty strains. No less than twenty-

five of these were secured by Friewer⁽⁹⁾ in one typical outbreak of "food poisoning" following consumption of cream pie. Among the remainder, a fatal case listed by Edwards^(8a) is noteworthy. Henderson⁽¹⁰⁾ also reported a fatal case of gastroenteritis in a child, and found the same organism in 4 other cases of his series. The number of strains isolated from infants and children is at least sixteen^(7,11).

Reports of *S. oregon* isolated from animals have been rare, although Borman and his coworkers⁽¹²⁾ group the organism with "Salmonellas of animal origin." Apparently the original strain from a turkey in Oregon⁽¹⁾, the strain from the intestine of a normal hen in Mexico City⁽¹³⁾, and the strains isolated by Hinshaw from a single outbreak in chicks in California⁽¹⁴⁾ are the only known strains of avian origin. In addition to the five cultures isolated by Rubin⁽¹⁵⁾, from lymph glands of normal hogs, a single culture isolated from the hog intestine and another from the liver of a cow have been reported by Varela^(11d). These represent the only reports of the occurrence of this organism in either normal or diseased livestock. Felsenfeld⁽¹⁶⁾ states that the organism occurs in rodents, but gives no reference to a publication substantiating this statement. In view of these few reports of the isolation of *S. oregon* from animals, it appears that Felsenfeld did not evaluate the frequency of this organism correctly when he listed it as rare in man but comparatively frequent in animals.

S. oregon has been isolated rather frequently from spray-dried whole egg powder. It was one of five types isolated by

2. Kauffmann, F.: Ueber mehrere neue *Salmonella*-Typen. *Acta path. et microbiol. Scand.* 18:351-366, 1941.

3. Varela, G., Zozaya, J. and Olarte, J.: Investigacion de Salmonelas en las Materias fecales de Ninos con "Diarrea." *Rev. d. Inst. salub. y enferm. trop.* 4:313-317 (Dec.) 1943.

4. Kessel, J. F., et al.: *Shigella* and *Salmonella* Encountered in Southern California. *J. Bact.* 49:522-523 (May) 1945.

5. Seligmann, E., Saphra, I. and Wassermann, M.: *Salmonella* Infections in the U.S.A.: A Second Series of 2,000 Human Infections Recorded by the New York *Salmonella* Center. *J. Immunol.* 54:69-87 (Sept.) 1946.

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7. Varela, G. and Olarte, J.: Investigacion de Salmonelas en las Amigdalas. *Rev. d. Inst. salub. y enferm. trop.* 3: 289-292 (Dec.) 1942.

8. (a) Edwards, P. R. and Bruner, D. W.: The Occurrence and Distribution of *Salmonella* Types in the United States. *J. Infect. Dis.* 72:58-67 (Jan.-Feb.) 1943; (b) Bruner, D. W. and Joyce, B. J.: *Salmonella* Types Encountered by the 15th Medical General Laboratory. *Am. J. Hyg.* 45:19-24 (Jan.) 1947; (c) Bruner, D. W.: *Salmonella* Types Encountered in the Mediterranean Theater. *Mil. Surgeon* 97:324-327 (Oct.) 1945; (d) Galton, M. M. and Quan, M. S.: *Salmonella* Isolated in Florida during 1943 with the Combined Enrichment Method of Kauffmann. *Am. J. Pub. Health* 34:1071-1075 (Oct.) 1944.

9. Friewer, F. et al.: The *Salmonella* Problem in Illinois: Distribution of Types and Their Identification. *J. Bact.* 47: 406 (April) 1944.

10. Henderson, L. L.: *Salmonella* Infections in Panama. *Am. J. Trop. Med.* 27:643-655 (Oct.) 1947.

11. (a) Angrist, A. and Molloy, M.: Bacteriologic, Clinical and Pathologic Experience with 86 Sporadic Cases of *Salmonella* Infection. *Am. J. M. Sc.* 212:336-346 (Sept.) 1946; (b) Hormaeche, E., Surrao, N. L., Peluffo, C. A. and Aleppo, P. L.: Causes of Infantile Summer Diarrhea. *Am. J. Dis. Child.* 66:539-551 (Nov.) 1943; (c) Olarte, J.: La Presencia de *Salmonellas* en las Materias fecales de Ninos con "Diarrea." *Ciencia* 2:209-214 (March 15) 1944; (d) Varela, G.: Bacterial Enteritis. *J. Pediatr.* 25:555-562 (Dec.) 1944.

12. Borman, E. K., Wheeler, K. M., West, N. E. and Mickle, F. L.: *Salmonella* Typing in a Public Health Laboratory. *Am. J. Pub. Health* 33:127-134 (Feb.) 1943.

13. Varela, G., Zozaya, J. and Olarte, J.: Investigacion de Salmonelas en Pollos normales. *Rev. d. Inst. salub. y enferm. trop.* 5:11-14 (March) 1944.

14. Hinshaw, W. R., McNeil, E. and Taylor, T. J.: Avian *Salmonellosis*; Types of *Salmonella* Isolated and Their Relation to Public Health. *Am. J. Hyg.* 40:264-278 (Nov.) 1944.

15. Rubin, H. L., Scherago, M. and Weaver, R. H.: The Occurrence of *Salmonella* in the Lymph Glands of Normal Hogs. *Am. J. Hyg.* 36:43-47 (July) 1942.

16. Felsenfeld, O.: The *Salmonella* Problem; Practical Laboratory Applications of Recent Advances. *Am. J. Clin. Path.* 15:584-608 (Dec.) 1945.

Schneider⁽¹⁷⁾, and Solowey and his coworkers⁽¹⁸⁾ found it in seventeen samples. Since this type is more frequent in man than in birds, it is probable that human carriers were the source from which this organism was introduced into the powdered egg.

There are undoubtedly other instances of the occurrence of this type of *Salmonella*. Edwards^(8a) suggests that some authors may not have distinguished *S. oregon* and *S. manhattan* from *S. muenchen*.

Treatment of Salmonella Infections

The treatment of *Salmonella* infections has been studied by various investigators, but their conclusions are not in complete agreement. The sulfonamides are apparently not effective⁽¹⁹⁾. Baker and Bragdon⁽²⁰⁾ reported 6 cases of *Salmonella* infections in military personnel, and were unable to demonstrate any real therapeutic response to several types of sulfonamides.

Streptomycin seems to be a more promising agent. *In vitro* tests reported by West⁽²¹⁾ showed *Salmonella* to be sensitive to streptomycin in a concentration of 8 to 16 units. Using a different test routine, Seligmann and Wassermann⁽²²⁾ found that either 4 or 8 units inhibited most strains. The National Research Council⁽²³⁾ reported a series of 26 cases of *Salmonella* infections treated with streptomycin; 10 patients recovered, 6 showed no improvement, and 8 died. The Council called attention to the probability that *Salmonella* strains vary considerably in their sensitivity to streptomycin, and suggested localization of the infection and complications as possible additional factors in the response to the drug. The average dose of streptomycin employed in this series was 3 Gm. daily for seven days. Pulaski and Amspacher⁽¹⁹⁾ used a combination of oral and intramuscular streptomycin in treating 10 patients with bacteriologically confirmed salmonellosis. This therapeutic program

eliminated the organisms from the bloodstream and feces, and produced relief of symptoms. The dosage employed was 4 to 6 Gm. daily for ten to fourteen days. Paine and his coworkers⁽²⁴⁾, however, concluded that streptomycin therapy of *Salmonella* infections has been generally unsuccessful. This conclusion was based on various reports, including those of Anderson⁽²⁵⁾, Seligmann⁽²⁶⁾, Morgan⁽²⁷⁾, and Keefer⁽²⁸⁾.

The literature contains almost no reports on the treatment of *S. oregon* infections. Foley⁽²⁹⁾ referred to tests of streptomycin sensitivity, stating that *Salmonella* strains, including *S. oregon* from cases and carriers, were susceptible to the drug in concentrations of 4 to 64 micrograms. Varela^(11d) stated that sulfaguanidine was judged ineffective in infections with *S. oregon* and other types of *Salmonella*, since the organisms reappeared after the conclusion of what was regarded as a sufficient course of the drug. Seligmann and his coworkers⁽²⁶⁾ have confirmed this conclusion.

Several points seem to warrant consideration in a discussion of the treatment of *Salmonella* infections. As Pulaski⁽¹⁹⁾ points out, it is well to remember that salmonellosis is frequently a self-limiting disease and that apparent response to therapy in any given case may simply represent the natural course of the disease. It has been suggested that further trials be given streptomycin, with the early and prolonged use of large parenteral and oral doses. The combined routes of administration would logically be more effective, since it is well known that the *Salmonella* organisms are not confined to the bowel, but may invade regional lymph nodes and the bloodstream.

In any given case of salmonellosis the question may arise: Should streptomycin be withheld as long as the humoral and cellular forces are dealing satisfactorily with the infection, or should it be given immediately after the diagnosis is made? The mortality

17. Schneider, M. D.: General Survey on Occurrence of Species of *Salmonella* in High-Quality Egg Powder, Food Research 11:313-318 (July-Aug.) 1946.
18. Solowey, M. et al.: Microbiology of Spray-Dried Whole Egg: Incidence and Types of *Salmonella*. Am. J. Pub. Health 37:971-982 (Aug.) 1947.
19. Pulaski, E. J., and Amspacher, W. H.: Streptomycin Therapy for Certain Infections of Intestinal Origin. New England J. Med. 237:419-428 (Sept.) 1947.
20. Baker, M. P., and Bragdon, J. H.: Septicemia Due to *Salmonella* Enteritidis, New England J. Med. 237:175-179 (Aug. 7) 1947.
21. West, M. G., Doll, E. R. and Edwards, P. R.: Inhibition of *Salmonella* Cultures by Streptomycin. Proc. Soc. Exper. Biol. & Med. 60:363-364 (Dec.) 1945.
22. Seligmann, E., and Wassermann, M.: Studies of Streptomycin on *Salmonella* Cultures. J. Bact. 53:127 (Jan.) 1947.
23. Committee on Chemotherapeutics and Other Agents. National Research Council: Streptomycin in Treatment of Infections: Report of 1000 Cases. J.A.M.A. 132:4-11 (Sept. 7) and 70-76 (Sept. 14) 1946.

24. Paine, T. F., Murray, R., and Finland, M.: Streptomycin: Clinical Uses. New England J. Med. 236:701-712 (May 8) and 748-760 (May 15) 1947.
25. Anderson, D. G., and Jewell, M.: Absorption, Excretion and Toxicity of Streptomycin in Man. New England J. Med. 233:485-491 (Oct. 25) 1945.
26. Seligmann, E., Barash, L., and Cohlan, S. Q.: Streptomycin Treatment of *Salmonella* Enteritis in Infants. J. Pediatr. 30:182-187 (Feb.) 1947.
27. Morgan, H. J., and Hunt, J. S.: Streptomycin in Clinical Practice: Review and Case Reports. Am. Pract. 1:73-86 (Oct.) 1946.
28. Keefer, C. S., Weinstein, L., and Hewitt, W. L.: Clinical Experience with Streptomycin: Study of 50 Cases. Tr. A. Am. Physicians, 59:206-220, 1946; also M. Clin. North America 30:985-997 (Sept.) 1946.
29. Foley, G. E., and Rubenstein, A. D.: *In Vitro* Streptomycin Sensitivity of *Salmonella* Isolated from Cases and Carriers in Massachusetts. J. Bact. 54:90 (July) 1947.

rate in cases of salmonellosis is known to be relatively low. In view of the possibility that the organism may become resistant to streptomycin, it might be wise to hold the drug for use if and when massive invasion or septicemia occurs. In this connection, a search of the literature has failed to reveal any specific reports on the readiness with which resistance to streptomycin is acquired by *Salmonella* organisms.

Summary

A report of the first case of *Salmonella oregon* infection identified in North Carolina is presented. The report is the eleventh concerning the occurrence of this organism in man, and the eighteenth notation of its existence. This type of *Salmonella* appears to be widely distributed, but nowhere common.

REPORT OF A FOURTEEN-MONTH STUDY ON THE USE OF VAGINAL AND CERVICAL SMEARS IN THE DIAGNOSIS OF GENITAL MALIGNANCY

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This study was made to determine the practicability of using vaginal smears for the early diagnosis of genital malignancy. The report covers work done from January 1, 1947, through February, 1948. During the fourteen-month period, 10,112 smears were processed on 2352 patients.

The smear diagnoses were made with only a limited knowledge of the patient and without any knowledge of whether or not the patient had a malignancy. The material was derived largely from the obstetric and gynecologic clinics, although a few smears taken from patients of outside doctors are included in the series. During the initial months of

our study, smears were obtained only on patients with suspicious lesions. At the present time smears are obtained on all new patients and are requested on all return patients over 30 years of age who visit our clinics.

Methods

The techniques for obtaining and staining smears follow those of Papanicolaou and Traut⁽¹⁾. Our use of them has been described previously in this journal⁽²⁾.

The smears were classified for malignancy according to Papanicolaou's method⁽³⁾, as follows:

Table 1

Classification of Smears According to Malignancy

- Type I—Normal
- Type II—Atypical, but not cancer
- Type III—Cells suspicious of cancer
- Type IV—Cancer, but only after searching several fields
- Type V—Cancer

An attempt has also been made to classify the smears according to the estrogenic activity present. Most of the subtypes used in this work are listed in table 2. Those in part A are derived from Papanicolaou⁽³⁾. Those in part B are our adaptations of Papanicolaou's subtypes⁽⁴⁾. It is felt that these modifications describe somewhat more specifically the cytologic variants of postmenopausal vaginal mucosa.

Table 2

Classification of Smears According to Estrogenic Activity

Part A—Papanicolaou's Classification

- M—Menstrual
- F—Follicular
- R—Regressive
- PM—Premenstrual
- CM—Crowded menopausal
- AM—Atrophic menopausal

Part B—Suggested Modifications of Papanicolaou's Classification

- PM—Postmenopausal—premenstrual
- PM-CM—Premenstrual (predominant)—crowded menopause
- CM-PM—Crowded menopause (predominant)—premenstrual
- CM-AM—Crowded menopause (predominant)—atrophic menopause
- AM-CM—Atrophic menopause (predominant)—crowded menopause
- AMB—Atrophic menopause, basophilic
- AMA—Atrophic menopause, acidophilic

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4. Kernodle, J. R., and Cuyler, W. K.: *Vaginal Cytology of Post-Menopausal Women. Study I. Cytologic Variations in Vaginal Smears; Study II. Acidophilic Atrophic Vaginal Epithelium*, South. M. J., in press.

Table 3
Race

	Patients with Malignancy	Others*	Total	Per Cent
White	75	1181	1256	56.5
Colored	70	874	944	42.5
Indian	5	18	23	1.0
Total	150	2073	2233	100

* Minus 129 patients

Table 4
Parity

	Patients with Malignancy*	Others**	Total	Per Cent
Nullipara	17	360	377	17.5
Multipara	85	1169	1254	58.8
(1-5)				
Grande				
Multipara	46	466	512	23.7
(6 or more)				
Total	148	1995	2143	100.0

* Minus 2 patients

** Minus 209 patients

Results

Data on race, parity, marital status, and age

The data shown in tables 3, 4, 5, and 6 are closely similar to those found previously in our clinic, and those reported by others, including Novak⁽⁵⁾. Forty-six per cent of the malignancies were present in colored patients, though they represent only 42 per cent of the total number of patients studied. Malignancies are more prevalent in multiparous and married women. Ninety-seven per cent of the malignancies found were in married women, although only 71 per cent of all the patients in the series were married.

In figure 1 a close similarity can be seen between the two curves representing the ages of all patients and the ages of patients with malignancies. The entire latter curve begins later and reaches its peak later—between 45 and 60 years. Table 7 shows both a relative and an actual increase in the incidence of smears classified as type III, IV, and V in patients over 30 years of age.

Estrogenic activity

Classification of smears according to estrogenic activity is shown in table 8, which

Table 5
Marital Status

	Patients with Malignancy*	Others**	Total	Per Cent
Single	5	192	197	8.8
Married	102	1677	1779	80.1
Widowed	31	126	157	7.1
Divorced	0	32	32	1.4
Separated	9	48	57	2.6
Total	147	2075	2222	100.0

* Minus 3 patients

** Minus 130 patients

is divided into two parts. Part A gives the subtypes and classifications of Papanicolaou and Traut⁽¹⁾. Part B shows the subtypes considered by us to be intergradations of those of Papanicolaou and Traut. The largest group of patients fell into subtype PM, whereas subtypes CM-AM and AM-CM were seen least often.

The smears of 311 patients were subtyped as representing pregnancy, abortion, or the postpartum state. Four of these smears were diagnosed as malignant. One of these diagnoses was not confirmed by biopsy, although atypicalities of the cervical epithelium were present. In another patient biopsy showed intra-epithelial carcinoma. These 2 patients

Table 6

Ages Correlated with Presence of Malignancy

	Under 10- 10 11	15- 19	20- 24	25- 29	30- 34	35- 39	40- 44	45- 49	50- 54	55- 59	60- 64	65- 69	70- 74	Over 75	Totals
Patients with malignancy			3	5	14	18	15	25	19	21	12	9	5	5	151
Patients without malignancy	6	11	108	270	252	315	315	296	216	192	104	46	37	22	2201
Total	6	11	108	273	257	329	333	311	241	211	125	58	46	27	2352
Percent. of total	.3	.5	4.6	11.6	10.9	14.0	14.2	13.2	10.2	9.0	5.2	2.5	2.0	1.1	100%
Percent. of patients with malignancy			2.0	3.3	9.3	11.9	9.9	16.6	12.6	13.9	7.9	6.0	3.3	3.3	100%

Table 7

Ages Correlated with Diagnostic Types

Types	Under 10- 10 14	15- 19	20- 24	25- 29	30- 34	35- 39	40- 44	45- 49	50- 54	55- 59	60- 64	65- 69	70- 74	Over 74	Totals
I	1	2	26	56	33	46	42	24	32	12	13	3	2	3	297
II	5	9	80	212	205	245	248	250	167	153	82	36	26	16	1739
III			1	8	20	14	15	13	18	10	5	7	3	2	116
IV				2	5	12	2	11	13	5	5	2	1	1	59
V			1	3	4	9	12	16	17	10	15	8	8	4	112
Not Diagnosed			1	1	5	4	5	4	1	5	1	1		1	29
Totals	6	11	108	273	257	329	333	311	241	211	125	58	46	27	2352

5. Novak, E.: Gynecological and Obstetrical Pathology, ed. 2. Philadelphia, W. B. Saunders Co., 1947.

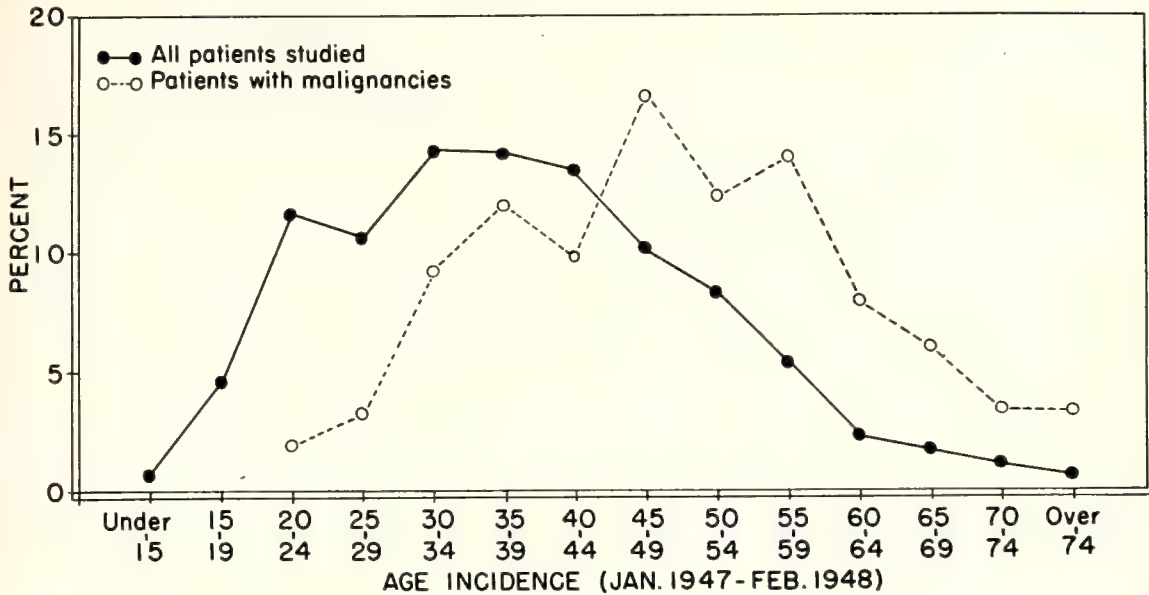


Fig. 1

will be followed closely after the involutional period for the investigation of reversible changes⁽⁶⁾.

Diagnosis of malignancy—comparison with results of pathologic examination of tissue

Table 9 shows the percentage of error by failure to diagnose the presence of malignancy to be 8.6 per cent. In the cases where a smear diagnosis of malignancy was not confirmed by biopsy, the percentage of error varies according to whether the computation is based on the total number of patients with pathologic studies, on those with be-

nign pathologic studies, or on all patients in the series without malignancies.

In table 10 the diagnoses made with concomitant pathologic study of tissue are divided into malignant and non-malignant conditions. The malignancies do not appear in the usual proportions, since adenocarcinomas of the endometrium are few in comparison to squamous-celled carcinomas of the cervix. Likewise, the proportion of adenocarcinomas of the cervix and sarcomas of the uterus is unusually large. In 5 patients pathologic examination showed atypical cervical epithelial changes. By smears, 3 of these cases were initially diagnosed as

Table 8

Smears Classified According to Estrogenic Activity

Part A—1804 Smears Classified under Papanicolaou's Subtypes

M	103
F	258
R	354
PM	367
CM	104
AM	207
Pregnancy, postpartum, and abortions	311

Part B—115 Smears Classified as Intergradations of Papanicolaou's Subtypes

M-F	15
F-R	19
R-PM	18
PM-M	15
PM-CM	15
CM-PM	15
CM-AM	9
AM-CM	9

Table 9

Percentages of Error

Total number of smears	10,112
Total number of patients	2,352
Total number of patients with concomitant pathologic studies	803
Total number of malignancies diagnosed by pathologic studies	151
Total number of malignancies diagnosed by smears	138
Percentage of error by failure to diagnose the presence of malignancy	8.6
Total number of patients without malignancies	2,201
Smear diagnosis of malignancy not confirmed by biopsy	33
Percentage of error by unconfirmed smear diagnosis of malignancy	
Based on total number of patients without malignancies	1.5
Based on 652 patients with concomitant non-malignant pathologic studies	5.1
Based on 803 patients with concomitant pathologic studies	4.1

6. Such changes were discussed at the Conference on the Cytologic Method of Diagnosis in Cancer, Boston, April 13, 1948.

Table 10

Diagnoses Made by Concomitant Pathologic Examination of Tissue in 803 Patients

A. Malignancies

1. Squamous-celled carcinoma of the cervix.....	117
2. Squamous-celled carcinoma of the vulva.....	5
3. Squamous-celled carcinoma of the vagina.....	1
4. Adenocarcinoma of the endometrium.....	12
5. Adenocarcinoma of the cervix.....	7
6. Adenocarcinoma of the oviduct.....	1
7. Metastatic adenocarcinoma of the vaginal wall	3
8. Sarcoma of the uterus.....	3
9. Undifferentiated carcinoma involving the oviduct, peritoneum and ovary.....	1
10. Chorionepithelioma	1

Total number of malignancies151

B. Nonmalignant Conditions

1. Chronic cervicitis	283
2. Atypicalities of the cervical epithelium.....	5
3. Polyp	
a. Endocervical	56
b. Endometrial	6
4. Normal cervix	10
5. Myoma	68
6. Chronic endometritis	2
7. Normal endometrium	120
8. Hyperplastic endometrium	5
9. Others	97

Total number of non-malignant conditions.....652

malignancy, a fourth was placed in the suspicious group, and the fifth was thought to be chronic cervicitis with metaplasia of the cervical epithelium.

Table 11 shows an analysis of malignancies according to kind and month of diagnosis. The monthly totals show nothing remarkable. During the first seven months there were 79 malignancies. Eight were missed, making an error of 10.1 per cent. During the last seven months there were 72 malignancies. Five were missed, making an error of 7 per cent. These figures indicate an increased efficiency during the last seven months.

Squamous-celled carcinoma of the cervix was diagnosed with greater accuracy than any of the other forms. The three rare malignancies—primary oviducal, squamous-celled carcinoma of the vagina, and chorionepithelioma—were diagnosed as cancer, but the actual type was not recognized. Only after much experience can one become expert enough to identify such malignancies correctly.

Table 12 summarizes the 13 cases in which malignancies were not diagnosed by smear.

Table 11
MALIGNANCIES: **

	1947 JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	1948 JAN.	FEB.	TOTAL
Squamous Celled Ca. of the Cervix	5 4 1*	13 11	8 8	7 4 1*	5 3	14 12 1*	13 13	8 5 2*	6 4 2*	10 8 2*	6 6	7 6	6 6	9 8	117 98 9*
Squamous Celled Ca. of the Vulva	1 1				1 1		1 1			2 1 1*					5 4 1*
Adenoca. of the Cervix		2 1							4 2 2*				1 1*		7 3 3*
Adenoca. of the Endometrium	1 1		1 1		2 2				1 1*	3 1 2*	2 1			2 1	12 7 3*
Sarcoma		2 2*					1 1*								3 3*
Ovarian Metastas- is to the Vagina							1 1*		1 1*	1 1*	1 1*				4 4*
Miscellaneous							1 ^(a) 1*			1 ^(b) 1*				1 ^(c) 1*	3 3*
Total	7	17	9	7	8	14	17	8	12	17	9	7	7	12	151
Missed		3		2	2	1		1			1	1		2	13
% Error		17.6		28.6	25	7.1		12.5			11.1	14.3		16.7	8.6

* Malignancy diagnosed by smear but of different kind.

(a) Chorionepithelioma

(b) Oviducal adenocarcinoma

(c) Squamous celled carcinoma of the vagina

** Pathology Diagnosis (over line)

Smear Diagnosis (under line)

Table 12
Reasons for Failures to Diagnose Malignancy by Smear

<i>Distortion of cancer cells by irradiation—4 cases</i>	<i>Preliminary Diagnosis</i>	<i>Clinical Stage (League of Nations Classification)</i>	<i>Review Diagnosis</i>
Case 1	Type III	III	Type IV
Case 2	Type III	III	Type IV
Case 3	Type II	IV	Type II
Case 4	Type II	II	Type IV
<i>Cancer cells present but not recognized—4 cases</i>			
Case 1	Type III	Adenocarcinoma of endometrium	Type V
Case 2	Type III	III	Type V
Case 3	Type II	I	Type V
Case 4	Type II	I	Type IV
<i>Insufficient epithelial elements or poor fixation—5 cases</i>			
Case 1	Type III	III	Type III
Case 2	Type III	III	Type III
Case 3	Type II	III	Type III
Case 4	Type II	II	Type II
Case 5	Type II	Adenocarcinoma of endometrium	Type II

It includes 6 patients whose smears were classified as suggestive of cancer (type III), but who actually had far-advanced malignancies. When the smears on these 6 patients were reviewed, 4 were reclassified as definitely malignant, but 2 were still placed in the suspicious category.

In 7 of the cases reviewed in table 12, the smears were classified as type II—atypical but not suggestive of cancer. The review diagnosis on the smears affected by irradiation was positive in the patient with stage-II carcinoma, but was not changed in the patient with stage-IV cancer; smears from the latter were masked with much debris, blood, and leukocytes. Smears from the 2 patients with stage-I cancer were reviewed and rediagnosed as type V and IV respectively; the anaplasia was first interpreted as hyperplastic endometrium.

The most important group is that made up of the smears which were missed and which, even upon review, could not be placed in a positive category. The endometrial carcinoma was not recognized as such, even in smears taken directly from the tumor's surface after hysterectomy. Fortunately all patients in whom the diagnosis could not be made by smear had clinical symptoms strongly suggestive of malignancy. It is our impression that smear diagnoses are more accurate in the early stages of malignancy.

The 33 cases in which a smear diagnosis of malignancy was not confirmed by biopsy (table 13) are divided into two groups. Only 21 of these 33 patients have had biopsies

Table 13

**Summary of Cases on Which the Diagnosis of
Malignancy by Smear Has Not Been
Confirmed by Biopsy**

Patients who had had irradiation for carcinoma.....	14
Clinical evidence of carcinoma; negative biopsy.....	1
Clinical evidence of carcinoma; no biopsies.....	3
Clinical evidence of carcinoma; biopsy doubtful.....	1
No clinical evidence of carcinoma; negative biopsies	5
No clinical evidence of carcinoma; no biopsies.....	4
Other patients	19
Negative biopsies	9
No biopsies or follow-up examinations.....	4
Suspicious biopsies; no follow-up examinations..	6
Total	33

made. The patients in the first group had been treated for malignancy by irradiation before the smears were obtained. The second group contains 19 patients, 9 of whom had negative biopsies. Four have not responded to several requests to return to the clinic for examination and biopsy. Six others are being followed closely because of suspicious biopsies, similar to those seen in *in-situ* carcinoma.

In 10 patients malignancies were diagnosed by smear prior to diagnosis by pathologic examination of tissue (table 14). Two had suspicious clinical symptoms, but a positive diagnosis was not made for several months, and then only after repeated biopsies. Two patients were not suspected clinically of having a malignancy.

In the group of 151 patients with malignancies, the first smears in 16 cases were obtained after the patients had started or completed their irradiation therapy. In the

Table 14

Malignancies Diagnosed by Smears Prior to Diagnosis by Pathologic Examination of Tissue

A. Cases diagnosed by smears and then followed with several biopsies prior to positive pathologic diagnosis.	
Squamous-celled carcinoma of the cervix.....	2
B. Malignancies diagnosed by smears; first biopsy negative	
1. Squamous-celled carcinoma of the cervix..	2
2. Adenocarcinoma of the oviduct.....	1
C. Carcinomas recurring after irradiation and diagnosed by smears prior to the appearance of clinical symptoms	
1. Squamous-celled carcinoma of the cervix..	2
2. Ovarian carcinoma, metastatic to the vagina	1
D. Completely unsuspected cancers	
Squamous-celled carcinoma of the cervix.....	2
Total	10

group of 33 patients in whom a smear diagnosis of malignancy was not confirmed by biopsy, 14 had received irradiation therapy before the first smears were obtained.

Repeat smears

Repeat smears were made on 428 of the 2352 patients. Forty-seven of these patients were followed with daily smears during their Coutard series of deep roentgen therapy. A total of 2157 smears were obtained on this group of patients during their series of x-ray treatments. These patients, and 89 others with malignancies, were followed with additional smears after treatment.

Follow-up smears were made on 19 of the patients in whom a smear diagnosis of malignancy was not confirmed by biopsy. An effort is being made to follow up the other 14 patients in this group also.

There were 643 follow-up smears on the remaining 273 patients. One hundred and sixty-seven patients were requested to return for follow-up smears, but only 65 have done so. Routine repeat smears were obtained on 208 patients.

Summary

Smears numbering 10,112 were made on 2352 patients at Duke Hospital from January, 1947, through February, 1948. The smears were classified according to malignancy and estrogenic activity, and the patients were catalogued according to age, race, parity, and marital status. Our data on patients are closely similar to those reported by other workers.

The smears of 116 patients were suggestive of malignancy. Smears positive for malignancy were found in 171 patients. In 33

cases of the latter group, the smear diagnosis has not been confirmed by pathologic examination of tissue.

Pregnancy, abortion, or postpartum state was present in 311 patients. In 4 of these a diagnosis of malignancy was also made by smear.

There were 13 failures to diagnose the presence of a malignancy—an error of 8.6 per cent. In 33 cases a smear diagnosis of malignancy was not confirmed by biopsy—an error of 1.5 to 5.1 per cent, depending upon the group considered for computation.

In 10 patients malignancies were diagnosed by smear prior to the diagnosis by biopsy. Pathologic studies were made on 803 of the 2352 patients.

Daily smears were obtained on patients who were receiving deep roentgen therapy. Two hundred and seventy-three other patients have been followed by repeat smears.

Conclusion

Vaginal smears are recognized as an adjunct to biopsy and clinical observations in the early diagnosis of genital cancer. It is our impression that smear diagnoses are most accurate in the early stages of malignancy. The most important use of this technique would probably be a closely supervised screening program for all women of cancer age. At present, trained personnel are limited. Such a program will have to be planned and built slowly. Other uses of the technique consist in following patients with smears during and after therapeutic measures. In endocrine gynecology, estrogenic activity can be ascertained with a high degree of accuracy by means of vaginal smears.

The counterstains used in this study have been made available through the courtesy of Dr. C. E. Folsome of the Ortho Pharmaceutical Corporation, Linden, New Jersey.

Discussion

Dr. Ivan M. Procter (Director, Bureau of Cancer Control, Raleigh): While the diagnosis of cancer by the study of exfoliated cells is not entirely new, it has only recently been popularized by Dr. George N. Papanicolaou, of New York, who applied it mostly to vaginal smears and endometrium. Because cancer cells are exfoliated faster than normal cells, they can be found in the various secretions of the body. Sometimes the endometrium throws off cells for a long while before a cancer attacks deeper sections of the tissue, and before a pathologist can place a section of the involved organ under the microscope and make a satisfactory diagnosis. Cancer cells can be found not only in the vagina and the uterus, but in the bronchus, the mouth, the bladder, the prostate, and other organs.

In contrast to a biopsy, cytologic examination of a smear cannot locate the carcinoma; it merely tells us that there is cancer in that body cavity or organ.

Diagnosis by smears is relatively new, and we must necessarily exercise great care in its use. As Dr. Kernodle has pointed out, we must not think that we can take a vaginal smear and tell every woman whether or not she has cancer, or will have cancer within the next year. Our success or failure in this new field will be directly related to the preparation, training, ability, and thoroughness of those who enter it.

THE EFFECT OF ANTI-RETICULAR CYTOTOXIC SERUM

Observations on Cases of Hodgkin's Disease

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The reticulo-endothelial system remains an enigma in spite of extensive research over a period of years. The diseases involving this system—the lymphomas—present unsolved problems in etiology and classification, and hence therapy is still unsatisfactory. Russian investigators over a long period of years have studied the reticulo-endothelial system from the standpoint of the physiology of the cells as well as their anatomy. They believe that the connective tissue has definite physiologic functions: (1) trophic—maintenance of cellular nutrition and of the hemato-parenchymal barrier, and cellular metabolism of proteins, lipoids, bile, and iron; (2) plastic—healing of wounds and fractures; (3) protective—phagocytosis of bacteria, formation of antibodies, reaction to neoplasms; (4) autoregulative—the internal secretion of stimulating substances found in the spleen; (5) mechanical—maintenance of osseous and elastic tissue. Continuing the work of Mechnikov, Bogomolets has proposed the use of a serum antagonistic to reticulo-endothelial cells as an adjunct to accepted types of therapy in a wide variety of diseases⁽¹⁾. The serum is prepared by the injection into horses of cells derived from the

spleen and bone marrow of uninfected human cadavers. The rationale of its use is based on a general biologic principle that material which is toxic to cells in large doses may stimulate them when given in small amounts.

The fascinating theories proposed and the striking results reported by Russian workers have led to investigation of the serum in this country. No record of its use by the Russian workers in the therapy of Hodgkin's disease is available.

Hodgkin's disease presents many unsolved problems. There is still disagreement as to whether the process is a new growth or an infection. If Hodgkin's disease is a neoplasm of the reticulo-endothelial system, the administration of a substance which would stimulate these cells would be harmful rather than beneficial. The isolation of *Brucella* organisms from the lesions of Hodgkin's disease has been reported, and attempts have been made to reproduce the condition by inoculating *Brucella* into experimental animals⁽²⁾. The results of the extensive studies on the role of infection in the etiology of Hodgkin's disease are not yet widely accepted. The present mode of treatment is the administration of roentgen therapy, which in itself is chiefly palliative.

Experimental Study

Plan of study

This investigation was undertaken to confirm or disprove the Russian reports that the plastic, protective, and trophic functions of the reticulo-endothelial system are stimulated by the serum. Decrease in the sedimentation rate and increase in the opsonic index, in the percentage of segmented neutrophils and monocytes, in the complement of the blood, and in the area of spread of trypan blue through the skin had been reported. Data on other objective tests to measure the plastic, protective, and trophic functions of the reticulo-endothelial system had not been recorded.

Our investigation of the Russian theories concerning the action of the serum on the reticulo-endothelial system is divided into four parts: the study of its effect on (1) blood cells, (2) tissue destruction, (3) capil-

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Read, in part, before the Section on Radiology, Southern Medical Association, Victory Meeting, Cincinnati, Ohio, November 12-15, 1945.

1. Bogomolets, A. A.: Anti-Reticular Cytotoxic Serum as a Means of Pathogenetic Therapy, *Am. Rev. Soviet Med.* 1:101-112 (Dec.) 1943.

2. (a) Forbus, W. D., Goddard, D. W., Margolis, G., Brown, I. W., and Kerby, G. P.: Studies on Hodgkin's Disease and Its Relation to Infection by *Brucella*, *Am. J. Path.* 18:745-748 (July) 1942; (b) Margolis, G., Forbus, W. D., and Kerby, G. P.: The Reaction of the Reticulo-Endothelial System in Experimental Brucellosis of Dogs, *Am. J. Path.* 21:733-778 (July) 1945.

lary permeability, and (4) possible infection with *Brucella*. Cases were selected to determine the value of anti-reticular cytotoxic serum as an adjunct to roentgen therapy in Hodgkin's disease.

Cases

During 1945, 4 patients with Hodgkin's disease received both irradiation therapy and anti-reticular cytotoxic serum. Before serum therapy was begun, all were admitted to the hospital for a period of observation in order to evaluate their condition and compare it with previous studies. Rectal temperatures were recorded. Any dehydration was corrected by parenteral administration of fluids. The patients were kept on a house

diet with adequate proteins, minerals, vitamins, and fluids. Films of the chest and other indicated diagnostic x-ray studies were made. Before serum therapy was started, each case was proved by biopsy.

The duration of the disease, the anatomic distribution, the microscopic type, and the time relation between roentgen therapy and the administration of the serum are shown in table 1. One patient (case 1) received the serum immediately before irradiation therapy, one (case 2) received serum one month after irradiation therapy, and 2 patients (cases 3 and 4) received serum alone, having had their last x-ray treatments the preceding year.

Table 1

Case	Dates	Anatomic Distribution	Microscopic Type	X-Ray Therapy		Dose	ACS Result
				Dose	Result		
1 32 WF	1940	Cervical	Paragranuloma	? r	Disappearance	—	Dead
	1945	Inguinal, liver, spleen	Granuloma, proliferative	912 r	No change	8.5 cc.	
2 28 WF	1943	Mediastinal	—	1165 r	Improved	—	Decrease in nodes Dead
	1945	Inguinal, lung, liver, spleen	Granuloma, proliferative	3744 r	Relief of pain	8.5 cc.	
3 28 WF	1944	Cervical, axillary, mediastinal	Granuloma, proliferative	3306 r	Decrease in nodes	—	Subjective improvement Subjective improvement Serum sickness
	1945	Inguinal		—		8.5 cc.	
	1946	Inguinal, abdominal		2470 r	Decrease in nodes	4.8 cc.	
	1947	Inguinal, abdominal				3.0 cc.	
	1948	Ascites, cervical, axillary		(Nitrogen mustard)	Loss of ascites		
4 54 WM	1944	Cervical	Lymphadenitis, many eosinophils	1140 r	Decrease in nodes	—	No change Dead
	1945	Mediastinal	Granuloma, necrotic, fibrotic	—		8.5 cc.	
	1947						
5 38 WF	1947	Cervical, axillary	Malignant lymphoma	—		3.0 cc.	Subjective improvement Subjective improvement
	1947	Cervical, axillary		—		3.0 cc.	
6 26 WM	1944	Cervical	Granuloma, proliferative	? r	Decrease in nodes	—	Enlargement of inguinal nodes, edema of leg Subjective improvement
	1945	Axillary		? r	Decrease in nodes	—	
	1946	Inguinal		? r	Decrease in nodes	—	
	1946	Abdominal		1116 r	Decrease in nodes	—	
	1946	Cervical, axillary, inguinal, abdominal		—		3.0 cc.	
	1946			1900 r	Decrease in nodes	—	
	1947			3116 r	Decrease in nodes	—	
7 48 WM	1946	Abdominal, axillary, cervical	Granuloma, proliferative	1672 r	Decrease in nodes	—	Subjective improvement Dead
	1947	Abdominal, axillary, cervical		—		3.0 cc.	
	1947						

Since this paper was presented in 1945, we have had an opportunity to treat additional cases with a second lot of the serum. One patient (case 3) received a second course before irradiation therapy, and later a third course; she subsequently has received nitrogen mustard therapy. Two patients (cases 5 and 7) received only serum therapy; one patient (case 6) received irradiation therapy both before and after the administration of serum. One patient (case 5) received two courses of serum within three months. The data on these patients have been added to table 1.

Methods

1. The effect of the serum on circulating blood cells was studied with daily total and differential white blood cell counts. Red blood cell counts and hemoglobin determinations by the Haden-Hausser method were done three times weekly. Duplicate blood determinations were always done by a second observer.

2. *Tissue destruction* was measured by (a) corrected sedimentation rates of the red blood cells performed by the Wintrobe method and (b) the Weltmann serum coagulation band. Each test was performed three times weekly. Duplicate sedimentation rates were done by a second observer.

3. The effect of the serum on *capillary permeability* was studied in the skin and in the circulating blood. Alterations in the skin were measured by (a) the exudation of fluid into histamine wheals, (b) the absorption of injected saline, (c) the spread of particulate matter through tissue. (a) Wheals were produced daily by the intradermal injection of 0.1 cc. of a 1:1,000 aqueous solution of histamine phosphate. The size and arrangement of pseudopods occurring ten minutes after injection were traced on transparent plastic. (b) The ability to absorb fluid was measured daily by the time required for the disappearance of 0.1 cc. of an 0.8 per cent solution of sodium chloride injected intradermally. Since the exact time of disappearance could not always be determined, this procedure was discontinued and data on it are not available for all cases. (c) The spread of particulate matter was measured by tracing on plastic the area of stain twenty-four hours after the intradermal injection of 0.05 cc. of a 1.0 per cent aqueous suspension of trypan blue. This colloidal dye is phagocytosed by macrophages, which carry it centri-

fugally. All three dermal tests were done adjacent to one another on the antero-medial aspect of the thigh. Sufficient space was allowed to avoid overlapping, and the site of injection was changed each time.

Alterations in the circulating blood were measured by determinations of blood and plasma specific gravities, made three times weekly by the copper-sulfate technique. The values for total serum proteins, hematocrit, and hemoglobin were calculated. The Kjeldahl method was used to determine the albumin-globulin ratios and in some instances to check the values for total serum proteins. The calculated hemoglobin values were compared with those determined by the Haden-Hausser method, and the hematocrit values were compared with those obtained by the Wintrobe method.

It had been planned to collect tissue fluid for study, but no edema developed and the samples could not be obtained.

4. The possible effect on an *infection with Brucella* was investigated by serial tests done three times weekly. Blood cultures for *Brucella* were done on individuals who had fever. The agglutination titer of each patient's serum against three strains of stock *Brucella* cultures was determined by the test-tube method. Opsonocytophagic indices, using live organisms of *Brucella abortus*, were done in duplicate by two observers. To avoid discrepancy resulting from possible sensitization of the patient's cells, the patient's serum—which should contain opsonins—and white cells obtained from a normal individual known to be non-reactive to *Brucella* antigen were used. The patient's serum was also tested with his own white cells. In 2 patients the complement titer of the blood was determined before, during, and after the administration of serum.

Treatment

Serum: The lyophilized anti-reticular cytotoxic serum⁽³⁾ used was prepared in this country. Ten cubic centimeters of sterile normal saline was added to each vial just before use. The serum dissolved readily when the vial was shaken by hand at room temperature; the solution was stored in a refrigerator at 10 C. between injections. Before the administration of serum was begun, an intradermal skin test using 0.1 cc. of a 1:10

3. The anti-reticular cytotoxic serum was furnished through the courtesy of Dr. Harry Goldblatt and Dr. Robert Heinle, Western Reserve University Medical School.

dilution was given and read at twenty minutes; this was negative in all patients. The first lot of serum (1945) was injected subcutaneously in four doses of 1.0, 2.0, 2.5, and 3.0 cc., given every other day in alternate arms. The second lot of serum (1946-47) was injected in three doses of 0.5, 1.0 and 1.5 cc. Courses were not repeated in less than six weeks. No systemic reactions were observed, and only rarely were minimal local reactions seen. In one patient (case 3) serum sickness developed after the third course. During the administration of serum, phenobarbital was given for sedation when necessary; aspirin was used very sparingly because of its known effects on the sedimentation rate. No other drugs were given.

Irradiation: Roentgen therapy was delivered to all clinically involved foci with a 200-

kilovolt, constant-potential x-ray apparatus. The technical factors were 200 kilovolts, 18 milliamperes, 50 cm. target-skin distance, and 0.5 mm. of copper plus 1.0 mm. of aluminum filtration; the half value layer was 1.25 mm. of copper. The portals were usually 100 to 225 square centimeters in area, but occasionally fields as large as 400 square centimeters were used, depending on the site and size of the lesion. Treatments of 150 to 250 r in air per field were given through one or two fields daily. Cervical, axillary, inguinal and other adenopathies were usually treated through a single field; mediastinal and retroperitoneal masses and enlarged spleens were treated with converging beams through two fields. The involved regions were treated successively, and each field was irradiated at intervals of two to four days, depending

CASE 1

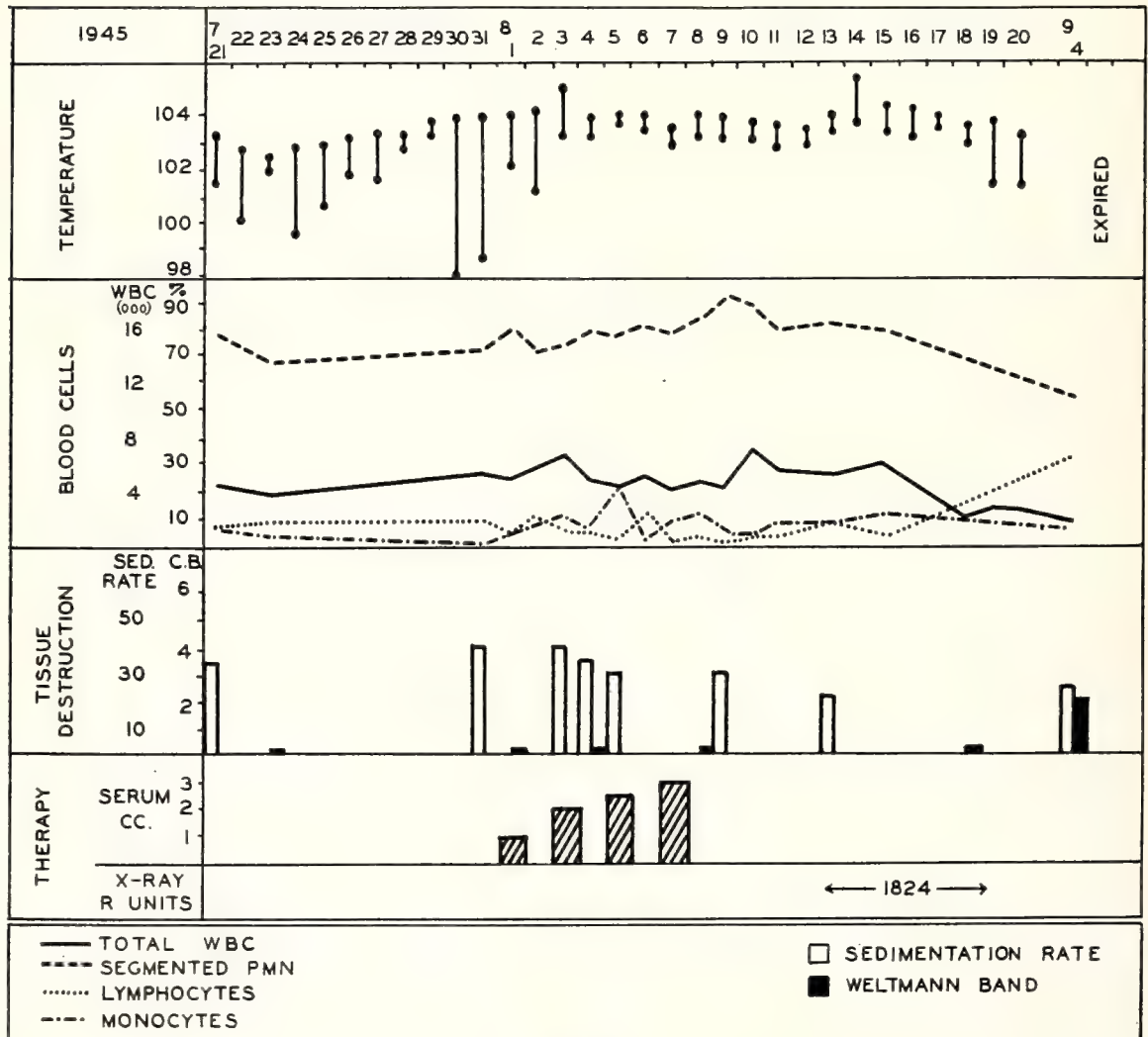


Fig. 1

on the reaction of the patient. The number of treatments, and hence the total dose, varied considerably and were determined by the clinical response of each patient. The relation of each series of irradiation therapy to the administration of anti-reticular cytotoxic serum has been mentioned above.

Results

Of the 4 patients originally treated, one (case 1) died within three months. Another (case 2) showed objective improvement but died suddenly three months after discharge; death resulted from a massive hemorrhage following rupture into the stomach of a softened mesenteric lymph node. One (case 3) showed temporary subjective improvement, but has subsequently required a variety of therapy. The fourth (case 4) was unchanged at discharge, and died at home approximately eighteen months later.

In the second series of patients, one (case 5) has shown subjective improvement. Another (case 6) noted enlargement of the inguinal nodes and edema of the leg, but subjective general improvement. The third (case 7) noted subjective improvement, but died of miliary tuberculosis five months later.

A reduction in the size of nodes was noted in only one patient (case 2), two months after administration of the serum and three months after the cessation of x-ray therapy. It would be difficult to determine how much improvement should be attributed to the serum.

The objective findings in each case are summarized in figures 1 to 4. An alteration of the temperature curve was observed in 2 patients; in one (case 3) the temperature was lowered slightly by the first course of serum, and in the other (case 1) a widely swinging curve was converted to a high plateau type. Subsequent courses of serum did not materially affect the temperature in case 3. In the remaining cases the temperature was unchanged.

1. *Blood cells*: No significant alteration was observed in the hemoglobin or red blood cell count. Most of the variations in the white blood cell counts were considered to be within the normal range of daily fluctuation. A slight rise in the percentage of monocytes was observed during the administration of serum, but only in case 1 was the increase maintained longer than one day. A slight increase in lymphocytes was observed

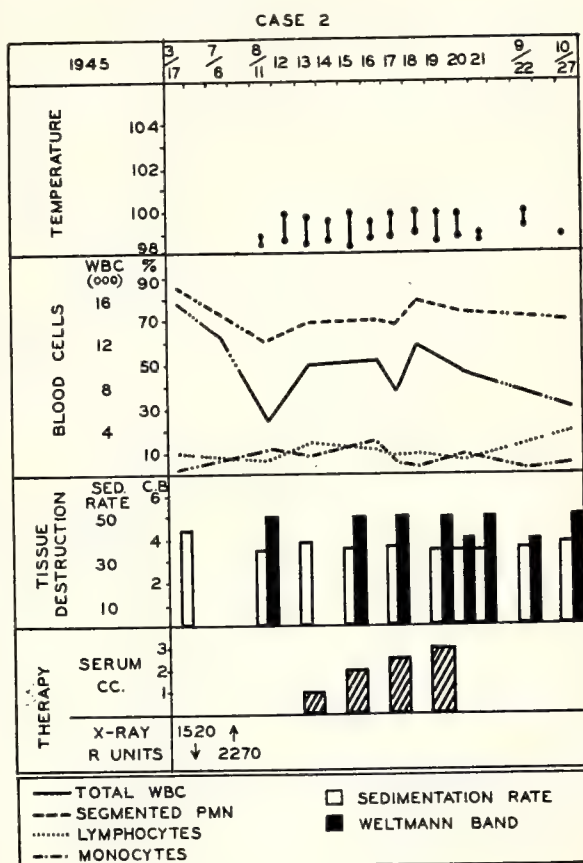


Fig. 2

in case 4, with a corresponding drop in segmented polymorphonuclears; the similar change occurring terminally in case 1 was attributed to secondary infection of a decubitus ulcer. No significant alteration in the nonsegmented polymorphonuclear cells was observed.

2. *Tissue destruction*: A drop in the sedimentation rate occurred in cases 1 and 3. The Weltmann coagulation band was reduced in cases 2 and 4, but elevated in case 3. The terminal elevation in case 1 followed x-ray therapy. None of these changes were impressive.

3. *Capillary permeability*: No significant alteration in blood or plasma specific gravities or in the calculated total serum proteins, hematocrit, or hemoglobin was observed. The data on 3 patients in whom specific gravities were determined are given in table 2. In cases 2 and 4 a transient rise in the total serum proteins was noted in the first reading after the conclusion of serum therapy, but there was no comparable change in hemoglobin or hematocrit values. The calculated values for the hemoglobin and hema-

Table 2

Case	Date	Observed		Total serum proteins	Calculated	
		Specific Gravity	Plasma		Hemoglobin	Hematocrit
2	8/11/45	1.0506	1.0281	7.2 Gm. %	11.2 Gm. %	33 vols. %
	13 *	1.0526	1.0276	7.2	12.1	36
	15 *	1.0526	1.0276	7.2	12.1	36
	17 *	1.0516	1.0266	7.2	12.0	36
	19 *	1.0521	1.0271	6.8	12.1	36
	21	1.0531	1.0286	7.4	12.2	36
	27	1.0496	1.0266	6.7	11.2	33
3	8/28/45	1.0521	1.0286	7.4	11.6	35
	30 *	1.0505	1.0280	7.0	11.0	33
	9/1 *	1.0503	1.0280	7.2	11.0	33
	3 *	1.0506	1.0276	7.1	11.2	33
	5 *	1.0481	1.0266	6.7	10.5	31
	6	1.0496	1.0276	7.1	10.9	32
4	8/23/45	1.0476	1.0276	7.0	9.9	29
	25 *	1.0466	1.0276	7.1	9.4	28
	28 *	1.0466	1.0276	7.1	9.4	28
	30 *	1.0476	1.0276	7.0	9.9	29
	9/3	1.0506	1.0316	8.4	10.0	30
	6	1.0461	1.0276	7.1	9.2	27

* Serum administered

CASE 3

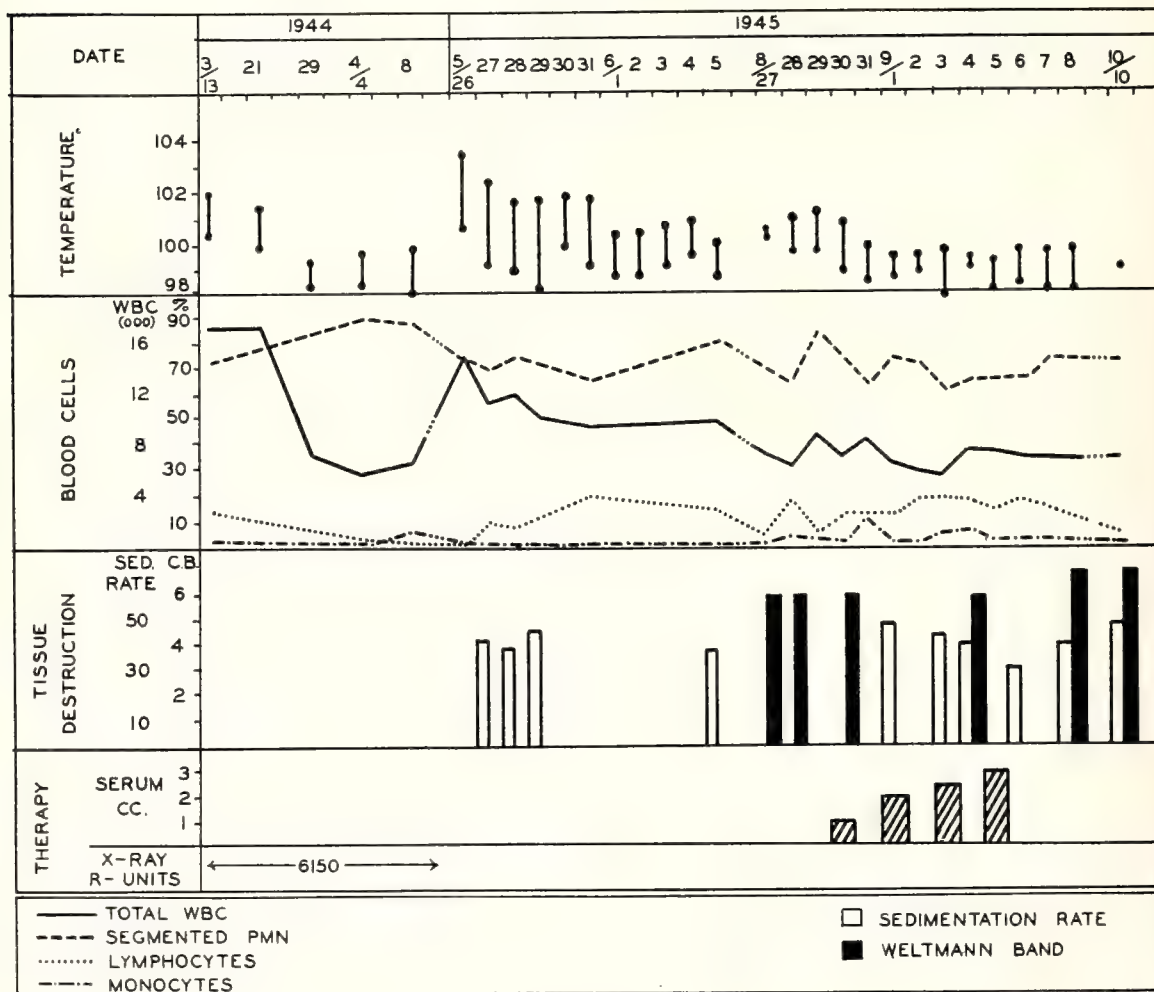


Fig. 3

to crit checked reasonably well with those observed in the blood study. No significant alteration in the area of histamine wheal or in the spread of trypan blue through tissue was observed; serial tracings are shown in figures 5 and 6.

4. *Infection*: Agglutination of all strains of *Brucella* was negative in every patient both before and after the administration of the serum. No phagocytosis was observed in the opsonocytophagic indices either before or after the administration of the serum. The complement titer was not significantly altered in the 2 patients tested. All blood cultures were sterile.

Subsequent studies on case 3, and the data on cases 5, 6, and 7 follow the same pattern of results as described above and hence are not reported in detail.

Unfortunately, permission was not granted to remove lymph nodes for microscopic examination after patients had received the

serum. The patients who expired died at home.

Discussion

Alteration in functions of the reticulo-endothelial system

Some objective evidence of transient minimal alteration in some functions of the body was observed. We were able to confirm alterations in the differential white blood cell count and in the sedimentation rate as reported by Bogomolets. We were not impressed, however, by the degree or duration of the change. The alterations in the Weltmann serum coagulation band are not impressive, but tend to follow the changes in the sedimentation rate.

The Russians interpret alteration in the sedimentation rate as evidence of change in capillary permeability. We prefer to consider it as evidence of tissue destruction. It is true that changes in the sedimentation rate and probably in the Weltmann serum

CASE 4

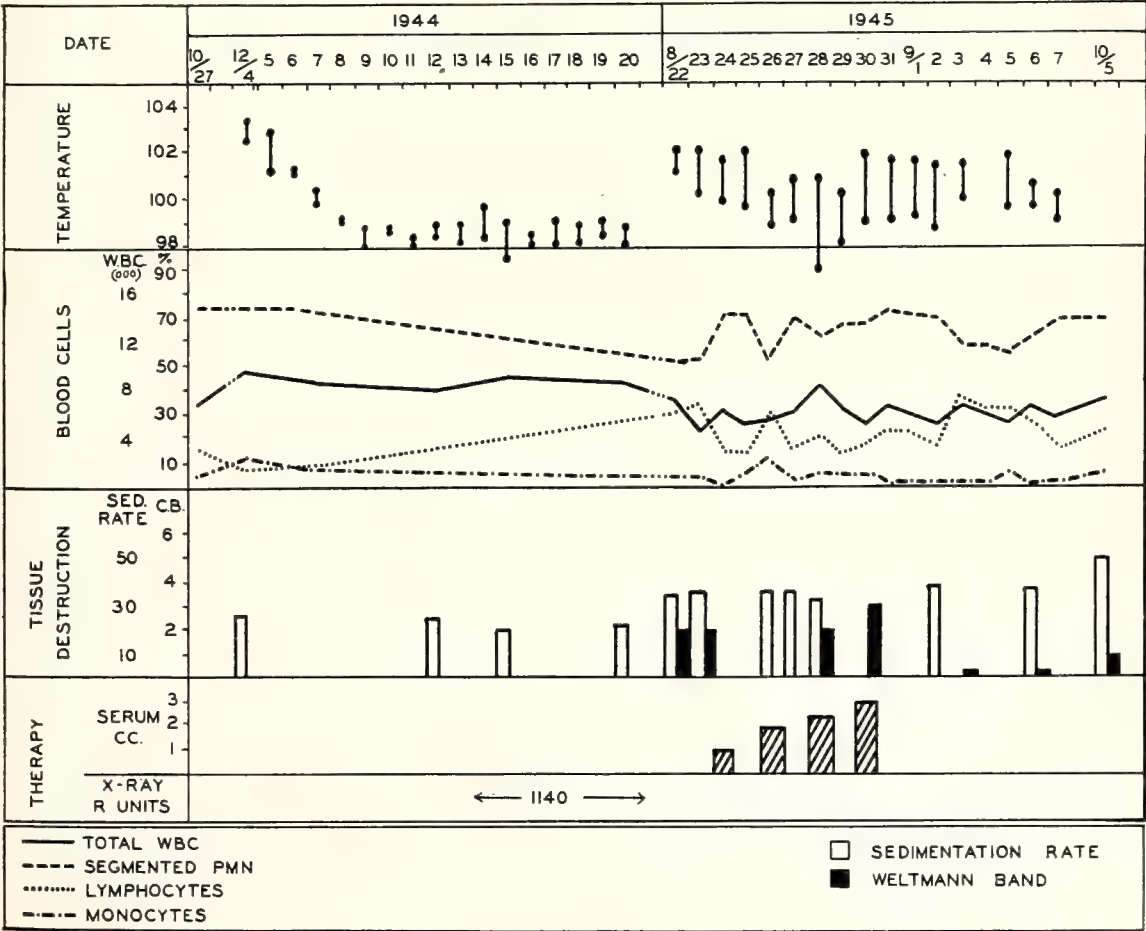


Fig. 4

HISTAMINE WHEELS

TRACINGS 10 MINUTES AFTER INJECTION OF 0.1 MG. HISTAMINE PHOSPHATE.

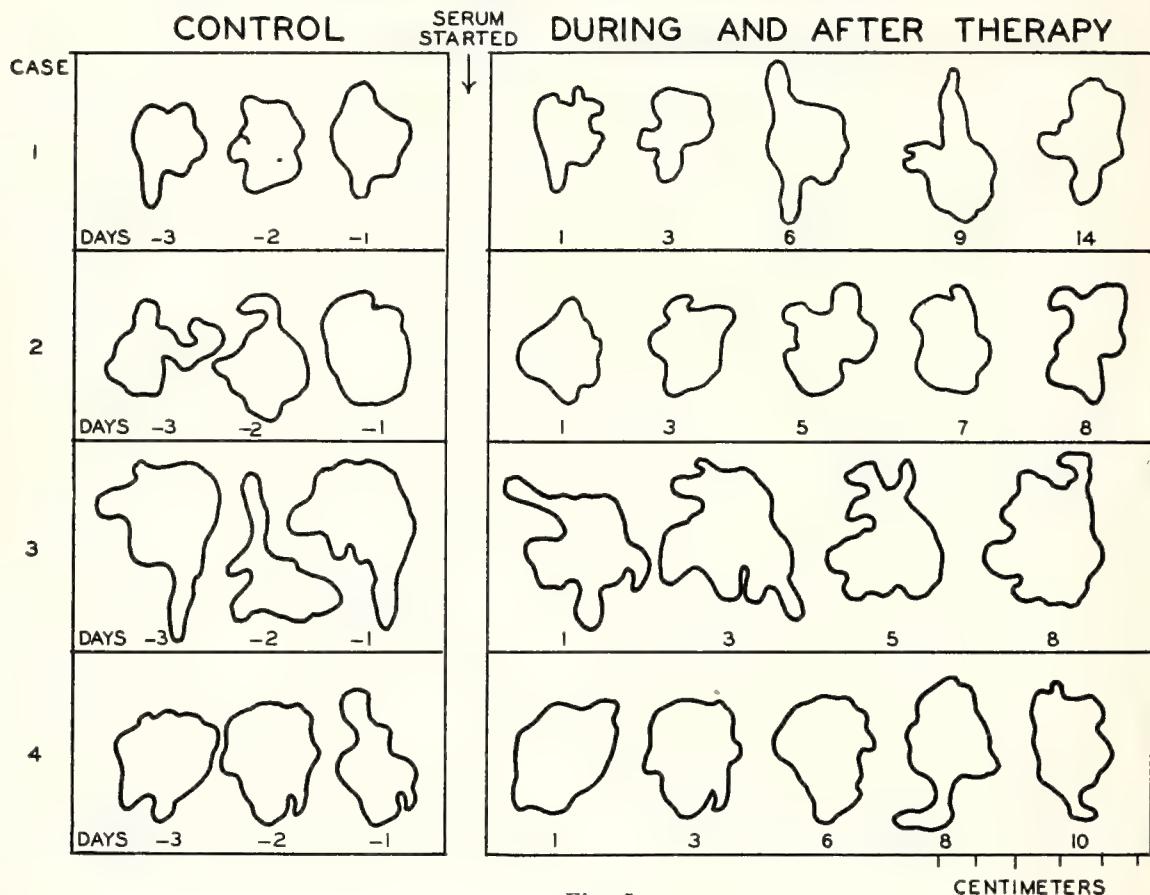


Fig. 5

coagulation band are dependent on qualitative alterations in the serum proteins, but in the Russian literature available to us there is no experimental evidence to support their thesis that the sedimentation rate is a measure of the porosity of the hemato-parenchymal barrier. Our studies of plasma and blood specific gravities, hematocrit, and total serum proteins do not offer evidence to show that fluid or protein is lost from the vascular system following administration of the serum. The Russians have reported an increase in the rate of spread of trypan blue as evidence of increased activity of macrophages. The speed of migration might be accelerated by an increase in interstitial fluid, but we are unable to demonstrate such an acceleration, whatever the mechanism may be. The histamine wheal and saline absorption studies demonstrated no change in the circulation of extravascular fluid. By

none of our studies were we able to demonstrate alteration in the hemato-parenchymal barrier.

No change in the immune status in relation to *Brucella* was demonstrated, though it should be pointed out that no positive cultures, agglutinations, or opsonocytaphagic indices were observed in these patients. With this test organism, which was chosen because of the possible relationship of *Brucella* infection to the etiology of Hodgkin's disease, we were unable to confirm the Russian observation that phagocytosis of bacteria is increased following the administration of serum. No increase in complement titer was demonstrated.

Use of the serum in Hodgkin's disease⁽⁴⁾

The results from the use of anti-reticular cytotoxic serum as an adjunct to therapy in

1. Since this paper was prepared for publication the following study has been published: Skapier, J.: Therapeutic Use of Anti-Reticular Cytotoxic Serum (A.C.S.) in Hodgkin's Disease, *Cancer Research* 7:369-371 (June) 1947.

SPREAD OF DYE

TRACINGS AFTER INTRADERMAL INJECTION OF 0.1 CC. 1% TRYPAN BLUE

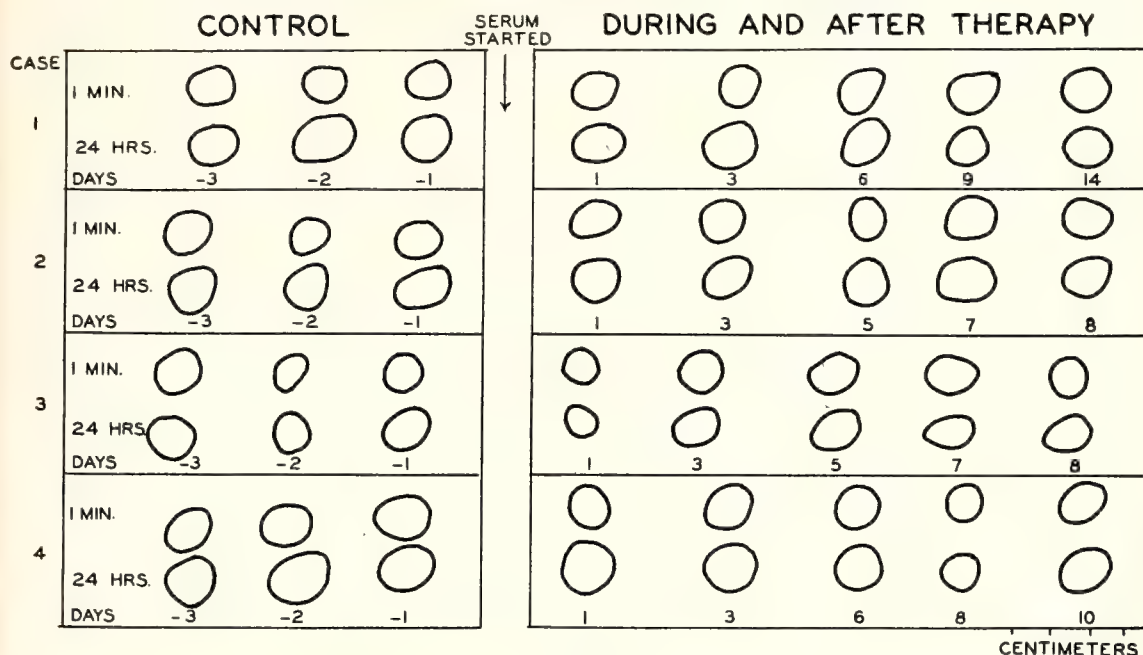


Fig. 6

Hodgkin's disease have so far been disappointing. Little benefit was observed in most patients. No harm resulted directly from the use of the serum, though one patient (case 3) was uncomfortable as a result of serum sickness. The patient (case 1) who died promptly was critically ill from the time therapy was begun. What role the serum may have played in softening the nodes and precipitating the fatal hemorrhage in case 2 is difficult to say.

It apparently made little difference whether the serum was given before or after irradiation therapy. Definite subjective improvement was observed in case 3—one of the patients who did not receive any irradiation therapy immediately before or after the first administration of serum. The objective improvement noted in case 2 following irradiation and serum had been observed in a previous year from x-ray therapy alone. In case 4—the patient whose condition was unchanged after serum therapy alone—irradiation therapy had proven very efficacious when given alone the preceding year. The results in the other cases follow the same patterns. In our opinion, anti-reticular cytotoxic serum will not supplant irradiation therapy as the treatment of choice. It

offers some hope in the temporary subjective relief of symptoms in certain patients.

The failure of anti-reticular cytotoxic serum to increase the speed of progression of the disease offers no support to the contention that Hodgkin's disease is a neoplasm.

Critique of experiment

It is possible that we have not duplicated the exact conditions of the Russian experiments. Bogomolets stresses the fact that only small amounts of the serum—0.03 to 0.1 cc. of 1:100 titer—should be used. Our doses were much greater. Bogomolets recommends dilution of the serum ten times before injection; our serum was administered undiluted, but this should be of little consequence. Since we do not know the titer of the serum by the Russian method of titration, the validity of our experiment may be questioned.

The Russians report a relative lymphocytosis at three to four hours and changes in the hemato-parenchymal barrier after the second dose of serum, but the objective criteria to substantiate these reports are not given. Our patients were followed in the hospital for several days after the conclusion of serum therapy, and were observed

at monthly intervals thereafter. It might be wise to make observations once or twice weekly, rather than at monthly intervals.

Alterations in the amount of interstitial fluid could be further studied by determination of the extravascular thiocyanate space. Qualitative alterations in serum proteins, suggested by the slight alteration in the sedimentation rate and Weltmann coagulation band, could be further investigated by following the blood fibrinogen and the electrophoretic pattern.

Are the changes reported by the Russians due to anti-human rather than anti-reticular cytotoxic effect? It is difficult to believe that a serum could be made against a specific strain of cells, but this might be done by taking cells from one animal, injecting them into a second species, and using the serum in a third species. If guinea-pig cells were injected into rabbits and the rabbit serum injected into human beings, the anti-human effect would be ruled out.

In a disease which may run as chronic a course as Hodgkin's disease, results may not occur in a matter of days; however, some of these patients did respond to irradiation therapy within a few days. It might be wise to lengthen the course of therapy, especially if a more dilute serum is used.

Summary

1. Anti-reticular cytotoxic serum has been administered as an adjunct to irradiation therapy in 7 patients with Hodgkin's disease; no conclusive evidence of benefit was observed.

2. The effect of the serum on the circulating blood cells, on the rate of tissue destruction, on capillary permeability, and on a possible infection with *Brucella* was studied.

3. Minimal evidence suggestive of transient alteration in the reticulo-endothelial system was noted; observed changes in the differential white blood cell count and in the sedimentation rate confirmed the Russian reports.

4. Other alterations in function reported by the Russians were not confirmed, and additional objective tests to supplement the ones which they recorded failed to support their theories.

Tuberculosis must unquestionably be recognized as the most serious public health problem among non-white races.—Mary Dempsey, *Am. Rev. Tbc.*, Aug., 1947.

CONTINUOUS CAUDAL ANALGESIA IN POOR-RISK OBSTETRIC PATIENTS, ESPECIALLY THOSE WITH MARGINAL PLACENTA PRAEVA

ADAM T. THORP, M.D.

ROCKY MOUNT

The choice of anesthetic is extremely important in patients who are already a poor obstetric risk. A normal, healthy woman and a full-term baby may tolerate an anesthetic that might be a great disadvantage to the poor-risk patient and to the premature baby. An anesthetic which might increase the already existing handicap is definitely contraindicated; if, however, the relief of pain can be afforded by some means which does not increase the risk to mother or baby, that form of anesthesia or analgesia is just as definitely indicated. Among the conditions which demand extraordinary care in the choice of obstetric anesthesia are toxemia, respiratory infection, heart disease, prematurity, and possibly marginal placenta praevia.

Eclampsia

In my hands, no anesthetic agent has proven more satisfactory in eclampsia than continuous caudal analgesia. In 1943, Dr. Hingson⁽¹⁾ made the following observations on its use in this condition:

"1. A slow progressive blood pressure fall, frequently amounting to 100 mm. of mercury within one hour . . .

"2. There was an increase in the urinary output with a reduction in the concentration of the urine . . .

"3. Convulsions were controlled without resort to other forms of sedation. . .

"4. The mental cloudiness of these patients cleared remarkably . . .

"5. There was no appreciable change in the heart rate of the fetus . . ."

Recently Dr. Hingson has reported on the use of this analgesic method in 70 eclamptic patients, with only 2 maternal deaths.

Respiratory Infection

The fact that the drug used has no effect upon the mucous membranes makes continuous caudal analgesia especially desirable in the patient with any respiratory disease.

Read before the North Carolina Obstetrical and Gynecological Society, Mid Pines, April 15, 1948.

1. Hingson, R. A. and Edwards, W. B.: Continuous Caudal Analgesia, *J.A.M.A.* 123:538-546 (Oct. 30) 1943.

During the winter months the incidence of upper respiratory infections is noticeably lower in patients who have had continuous caudal analgesia than in those who were given inhalation anesthesia. In patients with tuberculosis and pneumonia the advantages of continuous caudal analgesia are too obvious even to mention.

Heart Disease

According to Dr. Hingson,

"There are certain physiologic phenomena which add to the burden of a diseased heart during the process of natural labor: (1) the emotional strain of the patient, often associated with cries of pain, (2) fear of what the next few hours will bring forth, (3) tachycardia, (4) voluntary straining. All of these increase the demand on a diseased heart . . . The stress and strain of labor has been known to account for an anoxemia which would contraindicate a general anesthetic.

"The patient under continuous caudal analgesia, however, is at ease and does not need her voluntary expulsive efforts. The rhythmic contractions of the uterus will expel the presenting part into the birth canal and will usually deliver it to the point of perineal bulging. From this point, outlet forceps or episiotomy will deliver the baby without adding to an already taxed circulatory system."

Prematurity

The pediatrician bases his prognosis for a premature baby largely on the type of anesthetic the mother has received. Continuous caudal analgesia causes no depression of fetal respiration. This statement is not true of any other method, except spinal anesthesia, that relieves the pain of labor. The premature infant's chances of survival are poor enough without the handicap of narcotic and anesthetic effects on his undeveloped respiratory mechanism.

The sacral motor paralysis produced by continuous caudal analgesia decreases the cervical resistance—a definite advantage to the premature baby.

Marginal Placenta Praevia

Has placenta praevia been listed as one of the contraindications for caudal analgesia because of actual experience and observation, or because theoretically it was considered unsafe?

The relaxation and rapid dilatation of the congested friable cervix present in placenta praevia would certainly cause one to expect an increased amount of hemorrhage. But has experience proven this theory to be true?

Among the thousands of women delivered under continuous caudal analgesia and spinal anesthesia, it is reasonable to suppose that there have been some undiagnosed cases of marginal placenta praevia and low implantation of the placenta; yet no one has reported excessive bleeding when these methods were employed.

Two years ago, I used continuous caudal analgesia for a case in which the diagnosis of marginal placenta praevia was not made until after the placenta was delivered. The estimated blood loss during the delivery was less than 100 cc. Shortly after that time, a pre-eclamptic mother with a premature baby showed evidences of placenta praevia. X-ray findings were consistent with low implantation of the placenta. Labor was induced by rupturing the membranes, and Willett's forceps was then applied. Labor progressed under mild sedation until the cervix was completely dilated. Caudal analgesia was instituted because the mother was not a good subject for inhalation anesthesia, and also because it would give the much desired baby a better chance. Delivery was accomplished in less than an hour, with the minimum amount of blood loss. The premature baby survived.

After a favorable opinion had been obtained from several conservative men who were in a position to know the dangers, I have subsequently employed caudal analgesia in 10 more cases of marginal placenta praevia; in none was the blood loss during delivery estimated at more than 125 cc., and each patient had an uneventful convalescence. In no case was the caudal anesthetic begun until the cervix was nearly or fully dilated. Only one of these patients had lost enough blood prior to the spontaneous or induced labor to require a blood transfusion. Of course, blood was on hand for each patient, to be used if necessary.

None of these 12 patients had lost a great amount of blood before labor began, and they were all multiparas with live babies. Their labors were from two to eight weeks premature. The weight of the babies varied from 2½ to 8 pounds, and all survived and left the hospital in good condition.

Modern treatment has improved the mother's chances in placenta praevia, but the fetal mortality still remains high. The

dangers to the child are prematurity, asphyxiation (the result of hemorrhage and anesthesia), and an unsuitable method of delivery. The mother should always receive first consideration, but any method which would permit more of these premature babies to be salvaged without danger to the mother would seem worth while.

Continuous caudal analgesia should certainly not be used in placenta praevia associated with severe hemorrhage and shock. Increasing the volume of the vascular bed of the lower extremities would accentuate the dangers of hypotension and anoxia.

It is recognized that 12 cases are far too few upon which to base any definite conclusion. The use of caudal analgesia in placenta praevia is not a procedure to be experimented with, except in recognized obstetric clinics by physicians who are trained in the methods of administering caudal analgesia and have had wide experience with its use.

New methods of treatment in peptic ulcer.—Those of us who have lived with ulcer through the last quarter of a century, by our age and experience and particularly by our disappointments in new forms of treatment, have earned the privilege or the right to be skeptics. We demand the test of time to prove whether new hopes are will-of-the-wisps or substantial cures. We have been led up too many blind alleys to want to go along wholeheartedly until we see the goal plainly at the other end. In this spirit, the American Gastroenterological Association has established two committees to study these methods on a national level and to report from time to time as fairly as possible on the results.—Sara M. Jordan: An Evaluation of the Peptic Ulcer Problem, M. Ann. District of Columbia 17:329 (June) 1948.

The problem of peptic ulcer is still a very complex one. Its solution probably requires many more years of patient and analytical observations and the use of the best possible clinical judgment.

There are, however, a few precepts established for us by experience which merit emphasis:

1. The disease should be diagnosed as early as possible and the ulcer and patient both treated, the ulcer healed, and the patient educated to keep it healed.

2. No ulcer should be regarded as intractable until so proven by meticulously administered medical management.

3. The intractable patient should not be confused with the intractable ulcer, and every appeal should be made to the intelligence of the patient in managing the disease.

4. No short-cut method of treatment which involves an unphysiologic procedure should be used until all other methods have been tried.

5. The recurrent ulcer, if on the gastric side, must be regarded with suspicion of malignancy and resected.—Sara M. Jordan: An Evaluation of the Peptic Ulcer Problem, M. Ann. District of Columbia 17:333 (June) 1948.

Maternal Welfare Section*

CASE REPORTS FROM THE RECORDS OF THE MATERNAL WELFARE COMMITTEE

Criminal Abortion

As far back as human records can be traced, there is evidence that man has attempted to interrupt pregnancy for other than medical reasons. Even today, when it is against the ethics of the medical profession and against the laws of the land, criminal abortion is still being carried out with amazing frequency. Taussig⁽¹⁾, in a complete review of the entire subject, came to the conclusion that more than 600,000 abortions occur annually in the United States. Of this number, 65 per cent are illegally induced. Since the mortality rate associated with abortion is 1.2 per cent, approximately 10,000 women annually die as a result of this procedure. Taussig also concluded that over half of the illegal abortions are carried out by physicians, the remainder being done by midwives and the patients themselves. The vast majority of abortions occur in married women. Only 10 per cent are performed in the unmarried group.

Most physicians have at one time or another been requested to interrupt a pregnancy for reasons of a social or economic nature. The reasons that are responsible for the alarming number of abortions may be divided into the following categories: (1) economic distress, (2) occupational change, (3) illegitimacy, (4) domestic relations, (5) fear of confinement. The attempt of women to solve their problems by the interruption of pregnancy leads to a tremendous number of unnecessary deaths. The following case records accurately illustrate this problem.

Case 1 — N. C. M. W. C. 9

A white woman, 37 years of age, was found dead in a hotel room. She was a divorcee who had become illegitimately pregnant, and her home was in a community one hundred miles distant. Arrange-

*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

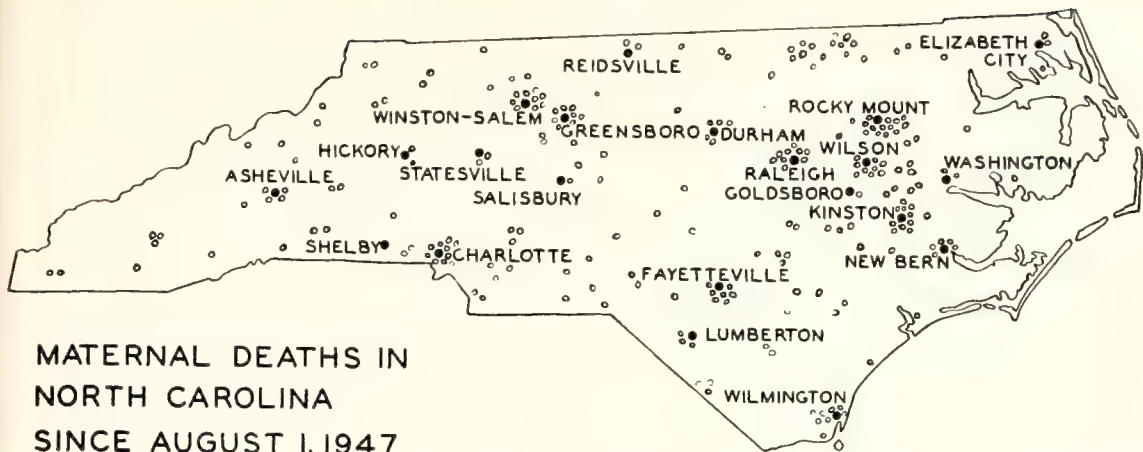
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1. Taussig, F. J.: Abortion, Spontaneous and Induced, St. Louis, C. V. Mosby Co., 1936.



MATERNAL DEATHS IN NORTH CAROLINA SINCE AUGUST 1, 1947

ments had been made by her companion—a man about her own age—for a criminal abortion. This operation was performed without anesthesia on the morning of her death. She was given medication for the relief of pain and sent away by the abortionist. During the night, the patient began to have free vaginal bleeding. Neither she nor the man who accompanied her dared to call a physician, because they feared exposure. When her condition became obviously serious, a reputable physician was called, but she expired before he arrived.

Case 2 — N. C. M. W. C. 87

A 17-year-old unmarried colored girl was admitted to a small urban hospital on November 30, 1946. She was in profound coma, and generalized anasarca was present. She had not passed any urine in six days, and none was obtained by catheterization on admission. A fetus of 3½ to 4 months' development was delivered spontaneously a few minutes after her admission to the hospital. The patient's course was progressively downhill, and she died three hours after admission.

After her death it was learned that she had taken a large quantity of turpentine by mouth in an attempt to induce an abortion. An autopsy showed extensive acute hemorrhagic nephritis caused by this toxic agent.

Discussion

These two deaths were classified by the Maternal Welfare Committee as preventable maternal deaths resulting primarily from ignorance on the part of the patient. In each instance, an illegitimate pregnancy was present. In an effort to avoid the social disgrace of having a child out of wedlock, both individuals chose to take the chance of illegal abortion.

Performance of abortion, whether legal or illegal, is potentially a dangerous procedure. In the Committee's files there are 8 cases of death resulting from therapeutic abortion. With the exception of 2 of these cases, which were done for pernicious vomiting, the indications for the abortion seemed adequate. Three of these patients died of pulmonary embolism, 2 of pneumonia, 2 of peritonitis,

and one of the illness which was the indication for abortion.

Illegal abortion is not primarily a medical problem, but rather a social and economic one. If we are to eliminate it, it will be necessary to do more than simply warn women concerning its dangers, because in their desperation they are willing to accept considerable risk. It is not the purpose of this paper to discuss the social and economic factors involved, but to point out the risk of abortion, whether illegally or legally induced. However, the medical profession, by providing contraceptive care, can reduce the number of illegal abortions. There are altogether too many cases in the files of the Maternal Welfare Committee in which the patient was advised not to become pregnant again, but was never told how to avoid pregnancy.



CHAPTERS IN THE HISTORY OF THORACIC SURGERY

Editor—JOSIAH C. TRENT, M.D., F.A.C.S.

VII

THE DEVELOPMENT OF ENDOSCOPY

The need for direct examination of the trachea and bronchial tree was recognized long before the technique for such an examination was perfected. Formidable barriers seemed to exist—the larynx, the supposed intolerance of the respiratory passages to the introduction of a foreign body, and the oblique position of the main bronchi.

Since these factors were not of major consideration in examination of the esophagus, it is not surprising that esophagoscopy received prior consideration. Halting progress in the development of esophagoscopy, begun by Bozini in 1807 and furthered by Boltolini and Wandenbergh in 1860 and Stoerk in 1866, culminated in the first direct esophagoscopy by Kussmaul in 1868.

In 1828, Green made an important discovery, although its significance was not appreciated at the time. He conceived the idea of medicating the larynx and introducing catheters into the main bronchi for purposes of examining these structures, thus demonstrating the tolerance of the respiratory tract to a foreign body. When, in 1885, O'Dwyer developed and demonstrated his intubation tube, it was made clear that the larynx could tolerate the continued presence of a foreign body. It was then possible to utilize the principles learned in esophagoscopy in the examination of the trachea.

In 1897 Killian showed that it was feasible to introduce straight tubes into the main bronchi and that the bronchi were sufficiently mobile and strong to permit displacement and straightening. He termed his method "direct bronchoscopy," and stressed the need for an opening in the side of the tube to permit respiration by the contralateral lung when the tube was in one of the bronchi. Ingals improved the instrument in 1904, when he first used a light carrier in the Killian tube and modified the single opening in the side by making a number of small perforations.

Einhorn, meanwhile, in 1902 had devised an esophagoscope possessing an auxiliary tube contained in the wall of the visualizing

tube, through which a light carrier and electric bulb could be introduced. Chevalier Jackson, in 1904, used the light carrier principle of the Einhorn instrument and combined it with the Killian bronchoscope, adding the further refinement of an auxiliary drainage tube. Thus he developed the bronchoscope essentially as we know it today.

That the laryngeal barrier had not been entirely overcome is evidenced by the fact that as late as 1905 "lower bronchoscopy"—the introduction of the bronchoscope through a tracheotomy wound—was frequently used. The superiority of the "upper bronchoscopy" method—introduction by the oral route—was recognized, but considerable practice was needed to master this route and lower bronchoscopy continued to be employed sporadically.

To Jackson must go the major credit for the applicability of the bronchoscope in diagnosis and treatment, since he not only perfected the technique but also trained the men to carry out the procedure. The amazing mortality rate (approximately 25 per cent) during the early days of bronchoscopy was reduced to a negligible morbidity by his insistence on careful manipulation and speed of execution of the maneuver. Jackson's co-workers, notably Ellen Patterson, Gabriel Tucker, Louis Clerf, Robert Lukens and William Moore, have also played a great part in perfecting the technique of bronchoscopy.

It was in the removal of foreign bodies that bronchoscopy was first employed. Priority in this field probably belongs to Killian, who, in 1897, succeeded in removing a bone from the right main bronchus by means of his tube, introduced by the oral route. In the succeeding years foreign bodies of all descriptions have been removed, and from the Jackson clinic has come an impressive array of cleverly contrived instruments ranging from nail cutters to safety-pin closers.

As, with increasing experience, the operation of bronchoscopy became less formidable, its use was rather haltingly extended from such life-saving measures as foreign body extraction to the treatment of pulmonary suppuration. It was found that lung abscess as well as bronchiectasis was often benefited by improving internal drainage, and, as a result of the reports of Jackson, Tucker, Clerf, Ballou, Miller, Myerson and others, bronchoscopic aspiration in these diseases was well established by 1923.

After the safety of the procedure had been established by its increasing use as a therapeutic measure, bronchoscopy was employed more and more for diagnostic purposes. Its value in the recognition of bronchial neoplasms was evidenced by the reports of Vinson, Moersch, Jackson and others. In 1928 Vinson reported that he had made a diagnosis of bronchial carcinoma, during life, on twenty-nine occasions.

As a diagnostic and therapeutic aid, bronchoscopic examination began to assume much the same role for the internist and thoracic surgeon that cystoscopic examination and pyelography played for the urologist. There was this difference, however: that while the urologist was usually in a position to undertake curative surgery once his diagnosis was made, the thoracic surgeon was handicapped by being unable to repair or remove the diseased lung with any degree of safety. As a result, the treatment of supuration and neoplasms of the bronchial tree was assumed by the bronchoscopist. When, however, thoracic surgery had advanced to the degree that the surgeon was able to invade the thoracic cage with impunity, he began to use the bronchoscope to an increasing extent. The quite logical result is that most thoracic surgeons now perform their own bronchoscopic examinations, just as the urologist performs his own cystoscopies. With this weapon in his hand the thoracic surgeon began to share the internist's burden in matters of diagnosis and in the treatment of postoperative complications and non-surgical pulmonary disease. This development has had the salutary effect of facilitating surgical intervention at a stage of the disease when cure is still possible.

Largely as a result of this collaboration between thoracic surgeon and internist has come the recognition of the part played by tracheobronchial tuberculosis in pulmonary tuberculosis. Although the importance of this complication was appreciated by Alexander prior to 1937, it is only during the past five or six years that there has been widespread recognition of the fact that the course of pulmonary tuberculosis is largely dependent on the presence or absence of this phase of the disease. Now that its role is appreciated, the scope of bronchoscopy, formerly used hesitantly in this disease, has been potentially extended to all cases of pulmonary tuberculosis, since the method of treatment is, in many cases, dictated by the

bronchoscopic findings.

A collateral result of this vastly increased use of the bronchoscope has been the perfection of technique to the point where the discomfort formerly associated with the procedure has largely been removed, the morbidity has been made negligible, and the contraindications made almost non-existent. As Samson has stated, the patient with pulmonary disease can no longer be said to be "too sick to be bronchoscoped, rather he is too sick not to be bronchoscoped."

The reader is referred to the excellent bibliographies appended to the article "History of Bronchoscopy and Esophagoscopy for Foreign Body" by Ellen J. Patterson (*The Laryngoscope*, 36:157-175, March, 1926) and to the textbook PERORAL ENDOSCOPY AND LARYNGEAL SURGERY by Chevalier Jackson (W. B. Saunders Co., Philadelphia, 1914).

FRANCIS X. BYRON, M.D.
Wadsworth General Hospital
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The records in the chest diagnostic clinics prove that the physicians of the state, if they are determined to do so, can perform a better job of suspecting and discovering active tuberculosis cases, year in and year out, than any other agency. It is noteworthy that in the past year, as in other years, more cases of active pulmonary tuberculosis were found among the referrals by physicians to the chest diagnostic clinics than in any other groups of people examined.—Comm. on Tbc., N. H. Med. Soc., New England J. Med., Oct. 23, 1947.

Characteristics of functional disease.—What briefly are the positive features which characterize functional as opposed to organic disease? The facial expression and general attitude and bearing of the patient may betray the underlying worry and anxiety. A nervous blush is often present on the neck and upper part of the chest. Tremor of the lightly closed eyelids and bitten finger nails betoken a state of nervous tension. There may be profuse perspiration in the axillae, even on a cold day. Not infrequently the patient brings a carefully compiled written list of symptoms or is accompanied by an anxious husband or wife to assist in giving the history.

A specimen of urine, which often contains phosphates, is often produced in order to make sure that the doctor makes, as he should do, a very full examination.

The symptoms are often dramatized and exaggerated, or described in some bizarre fashion. A headache is not just an ordinary headache, but is terrific, a feeling that something is being driven into the head, that the head is being held in a vice or that a piece of elastic is being stretched inside the head.—Leslie Hurley: *The General Practitioner and the Specialist*, M. J. Australia 1:68 (Jan. 17) 1948.

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JULY, 1948

DEWEY ON SOCIALIZED MEDICINE

It is generally recognized that the turning point in the race between Dewey and Stassen came in the Oregon primary last May. Although Governor Dewey came into Oregon with the odds three to one against him, he won such a clear-cut victory in the primary that Mr. Stassen was virtually eliminated as a serious contender for the Republican presidential nomination. A letter from a group of Oregon physicians—all past presidents of the Oregon State Medical Society—explains the sudden change in sentiment from Dewey to Stassen.

Soon after his arrival in Oregon, Governor Dewey said he would be "delighted" to talk to the House of Delegates of the Oregon State Medical Society and give his views on compulsory sickness insurance. In this impromptu talk he said:

"This is a subject . . . with which I have had a rare and unique experience. I had the idea a few years ago that the widespread movement to broaden the base of medical care could be met by govern-

ment action if the doctors were put in charge. In fact, . . . I thought I would try it out in New York . . . I appointed a commission of 19 people . . . They hired a research staff and then went to work.

"Finally, after . . . 18 months the research came through . . . I was thoroughly convinced, beyond a shadow of any possible doubt, that compulsory medical care was unworkable, that it would bankrupt our society and destroy the standard of medical care in our nation, and it would be the greatest catastrophe in the United States.

" . . . I had felt all along that if there was any merit to this thing it . . . should be done on a state level and kept close to the people and we ought not to use one hundred and forty-five million people as guinea pigs. We ought to use it on a small level, and if it failed abandon it . . . We got the Saskatchewan program, the New Zealand program and the Australian program and it was absolutely clear on the record that every time they tried to compel people to pay a certain sum to government for medical care they destroyed the medical care they were to receive.

"Compulsory, socialized medicine is no good. It cannot be done. Accordingly I have spent the last two years of my life knocking down every proposal that anybody has made to regiment the medical profession and the people of America through any program of socialized medicine. By making speeches publicly at every meeting of people that would listen to me on the subject, I have made clear that we have actually been through this thing, this thing which cost the people of my state \$200,000 to find out about. I don't want the money wasted. I don't want to run the risk of happening to the health of our people what has happened to the health of every group of people which has tried to drag the medical profession down to the Socialists' level. You won't drag anything up. You will enlarge the volume of medical care but utterly destroy the quality of medical care the minute you try that process."

In contrast, Mr. Stassen's stand on socialized medicine left the door open for federal interference with medical practice. The doctors of Oregon rallied behind Governor Dewey in a whirlwind campaign which undoubtedly turned the tide in his favor. The state victory was followed by a letter sent to physicians and dentists all over the United States, urging the nomination of Dewey in Philadelphia. Certainly this did not hurt his chances in the National Republican Convention.

It required courage for Governor Dewey to make his unequivocal statement in opposition to political medicine, knowing that his words would be broadcast over the state and nation and that he could not afford honorably to retreat from his position. Let us hope that he will not be influenced by his running mate, Governor Warren, who has twice attempted to force a state version of the Wagner-Murray-Dingell Bill upon California. This JOURNAL has faith enough in his integrity to believe that he will not double-cross the doctors of Oregon—and of the United States.

THE CHICAGO SESSION OF THE AMERICAN MEDICAL ASSOCIATION

The ninety-seventh annual session of the American Medical Association, held in Chicago June 14-18, was the first meeting in the second century of the organization. The registration was surpassed only by that recorded at the centennial meeting in Atlantic City last year. The final score showed 11,963 Fellows registered, with a total attendance of almost twice that number—including exhibitors, Auxiliary members, and guests.

The Navy Pier was used to house the commercial and scientific exhibits, as well as for the scientific sessions. The pier is quite a distance from the hotels of the city, and the temporary partitions separating the rooms in which the section meetings were held were so thin that those in the audiences were often confused by hearing two or more speakers at once. The hot weather made the Coca-Cola and Pepsi-Cola booths the most popular of the technical exhibits.

The House of Delegates was in session at the Palmer House every day from Monday through Thursday. Last year, at the Centennial Session, the work of the House was greatly delayed by the unprecedented number of visitors who had to be introduced and many of whom felt duty bound to speak. This year the reading and adoption of the revised constitution and by-laws consumed a great deal of time. In addition, an unusually large number of resolutions were introduced and many were discussed at some length. Since these will all be printed in the *Journal of the American Medical Association*, it is not necessary to enumerate them here. One that was of particular interest to the Southern delegates was introduced by New York: to amend the constitution of the American Medical Association so as to prohibit the exclusion of physicians from county societies—and hence from the American Medical Association—because of color. This resolution was referred to the Reference Committee on Executive Session, which wisely concluded that "The component medical society is the sole judge as to whom it elects to membership provided the applicant shall meet the medical requirements for membership."

The inaugural address of President R. L. Sensenich was published in the *Journal of the American Medical Association* for June 19. It can truly be said that it measured up

to the standard expected by those who know Dr. Sensenich—and that is praise enough. After this address, he presented the Distinguished Service Award to the veteran pediatrician, Dr. Isaac Abt.

The choice of Dr. Ernest Irons for president-elect was a happy one. Dr. Irons is a Chicago internist who has long been a leader in American medicine. For ten years he has served on the Board of Trustees, and since 1940 he has been its secretary.

Other officers elected are as follows:

Vice president—Roy W. Fouts, Omaha.

Secretary—George F. Lull, Chicago.

Treasurer—Josiah J. Moore, Chicago.

Speaker—Francis F. Borzell, Philadelphia.

Vice speaker—James R. Reuling, Bayside, N. Y.

Trustees—Gunnar Gundersen, La Crosse, Wis. (1953); Edward S. Hamilton, Kankakee, Ill. (1953); and Walter B. Martin, Norfolk, Va. (1951).

Judicial council—John H. O'Shea, Spokane, Wash.

Council on scientific assembly—Alphonse McMahon, St. Louis.

Council on medical education and hospitals—Harvey B. Stone, Baltimore, and William L. Pressley, Due West, S. C.

Council on medical service—Henry B. Mulholland, Charlottesville, Va., and Joseph D. McCarthy, Omaha.

* * * *

DR. ROY NORTON— STATE HEALTH OFFICER

On Thursday, July 1, Dr. John William Roy Norton was inaugurated as North Carolina's State Health Officer, succeeding Dr. Carl Reynolds. Dr. Norton is eminently fitted by training and by temperament for this important position. He is a native of Scotland County and obtained his A.B. degree from Trinity College—now Duke University. After three years as a school principal and one year in the Trinity Law School, he began the study of medicine at the University of North Carolina and graduated from Vanderbilt in 1928. He spent three years in hospital work and four years as superintendent of health in Rocky Mount. Then he took the public health course at Harvard, and in June, 1936, received the degree of Master of Public Health. After serving two years on the North Carolina State Board of Health, he became professor of public health administration in the University of North Carolina School of Public

Health in September, 1938. In November, 1940, he entered the United States Army as a captain. He was overseas three years, in Africa, Italy, and England, then was brought back to this country with the rank of lieutenant colonel and put in charge of sanitation facilities in seven of the North-western states. He was given terminal leave in September, 1945, and from then until called back home as state health officer he was in Chattanooga as a staff officer with the TVA.

In his brief inaugural address Dr. Norton showed a remarkable comprehension of the functions of a public health department. It is particularly gratifying that he recognizes the importance of shifting the emphasis from the control of communicable diseases to the problem of the degenerative diseases, four of which—heart disease, apoplexy, nephritis, and cancer—"are responsible for more than half the deaths which are occurring in North Carolina at the present time."

It is hardly necessary to say that the doctors of North Carolina, in common with the whole population, are glad to welcome Dr. Norton back home. The editorial board of the NORTH CAROLINA MEDICAL JOURNAL pledges him hearty cooperation in the years to come.

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WELCOME TO DR. GRAHAM AND DR. HARRELL

Unusually observant readers of the JOURNAL may have noticed that the masthead this month carries two new names in the editorial board—Dr. John Borden Graham of Chapel Hill and Dr. George T. Harrell, Jr., of Winston-Salem. These two men were elected by the editorial board to serve out the unexpired term of Dr. W. Reece Berryhill and Dr. C. C. Carpenter, who submitted their resignations at a meeting of the Board held in Raleigh on July 8.

Since the editorial board was organized in 1939, Deans Berryhill and Carpenter have served on it as the representatives of their respective schools—the Medical School of the University of North Carolina and the Bowman Gray School of Medicine of Wake Forest College. Their sound judgment and loyal support have been invaluable, but the board did not feel that it could continue to demand their services in the face of the many other obligations which deanship carries with it.

Dr. Graham, who was recommended by Dr. Berryhill as his successor, is instructor in pathology at the University of North Carolina School of Medicine. He is a native of Goldsboro and a graduate of Davidson College. After taking his first two years in medicine at the University, he received his M.D. degree from Cornell. He was in the medical corps of the army and served overseas for two years, returning to the University as instructor in pathology a year ago.

Dr. Harrell, professor of medicine at the Bowman Gray School of Medicine, has been of great service to the JOURNAL in an unofficial capacity for many years. In addition to contributing scientific articles and preparing clinicopathologic conferences, he has given valuable technical and editorial advice on numerous occasions. His election by the board, upon Dr. Carpenter's recommendation, is a well deserved recognition of his services.

The staff of the NORTH CAROLINA MEDICAL JOURNAL welcomes these two new members to the editorial board, and looks forward to having their cooperation in making the JOURNAL one of the best in the country.

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THANKS TO DR. OWEN

Since March, 1941, Dr. J. F. Owen of Raleigh has prepared for each month's issue of the NORTH CAROLINA MEDICAL JOURNAL a "Medicolegal Abstract." Dr. Owen's unique training in both law and medicine has eminently fitted him for writing these contributions. They have always been timely and interesting, and many of our readers have expressed their appreciation of this feature of the JOURNAL.

It was with genuine regret that a note from Dr. Owen, dated June 7, was received by the assistant editor.

"For the past few years I have enjoyed preparing the Medicolegal Abstracts for publication. At this time my practice has grown considerably, and I feel I do not have the time to write the abstracts as they should be written.

"I regret very much that I am unable to continue with them. Thanking you for your kindness and cooperation over the years, I am

"Very truly yours,
"J. F. Owen, M.D."

On behalf of our readers, the NORTH CAROLINA MEDICAL JOURNAL thanks Dr. Owen for his faithful services in the past, and invites him to submit any contributions that he will in the future.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

July, 1948

No. 7

THE first step in the eradication of tuberculosis is to find the persons who already have active pulmonary tuberculosis. If case finding is not carried on constantly it does little good for the community to provide hospital beds and other services, necessary as they are. For the persons who should use them will still be engaged in the ordinary activities of life in the community. When symptoms of tuberculosis appear it is usually too late to have prevented the spread of the disease and the best opportunity for effective therapy is gone.

TUBERCULOSIS CASE FINDING

Selective Service boards after mass X-ray study of all inductees showed that 90 per cent of the men rejected for tuberculosis had minimal disease, whereas almost 90 per cent of the patients admitted to the sanatoriums in this country have advanced disease.

Adults, rather than children, are chiefly responsible for the spread of tuberculosis. Public health laws should insist on the mass X-ray examination of all school teachers, food handlers and domestics—a surprising number of whom are admitted to sanatoriums. Tuberculosis is found more frequently in certain occupations than in others. The danger of silicosis and tuberculosis is well known, and much has been done to control the hazard of silica dust.

Student nurses and physicians are often exposed to infection in their daily duties. Every patient admitted to a general hospital should have an X-ray examination of the chest. If this were done, it is believed that the prevalence of tuberculosis among medical students and nurses would be reduced.

Reports have shown a high incidence of tuberculosis among inmates of mental hospitals. These patients are a source of danger not only for other inmates but also for the attendants. Tuberculosis is also prevalent among the inmates of prisons. The confinement and frequent overcrowding of these institutions gives an opportunity for the disease to spread. Since many prisoners are later discharged to their homes and communities the danger is obvious.

It is an accepted fact that decent housing, an adequate diet and an acceptable standard of living are necessary to keep down the tuberculosis rate. If the disease is to be eradicated, greater effort will have to be made to abolish slum areas and crowded tenement districts.

Industry must play its part in the reduction in the morbidity and mortality of tuberculosis. A pre-employment examination, including an X-ray film of the chest, should be required. Well established standards for ventilation, sanitation, health education and personal hygiene should be enforced.

The heavy economic and financial burden on the taxpayer of a long hospitalization is not fully realized by the general public. Case finding is a sound investment for any community. The earlier the case is diagnosed, the shorter the period of hospitalization. In addition, the number of cases will be definitely reduced, for the earlier segregation of the patient prevents spread of the disease to the family and the community.

The opportunity of practicing physicians to find

cases of tuberculosis is unquestionably greater than that of any agency. It is regrettable when patients are admitted to sanatoriums with far advanced tuberculosis after having been under treatment for months for chronic bronchitis. It is a safe policy for the physician to insist on an X-ray film of the chest whenever a patient's cough persists for more than two weeks. Any physician who waits to make a diagnosis of tuberculosis by auscultation imposes a grave responsibility on himself—nine out of every 10 cases by that time are in the advanced stage. It is no credit to a physician when an X-ray film of the chest shows existing tuberculosis after numerous cough mixtures have failed.

Again, the physician will find it advantageous to insist on an X-ray examination of the chest every six months on all diabetic patients. The high incidence and rapid spread of tuberculosis in diabetic patients are well known. It is further recommended that a chest X-ray film be taken in all cases of pneumonia approximately three months after the patient has fully recovered from the illness, since it has been shown on numerous occasions that an attack of pneumonia has been the responsible agent in lighting up an old inactive tuberculous lesion.

The board of health has a responsibility for those unable to obtain the services of a physician and also a responsibility to the physician to provide diagnostic facilities. The physician should report all cases of tuberculosis to his board of health as soon as the diagnosis is established.

The medical graduate is often told that tuberculosis is a waning disease that will completely disappear in a few years; medical students 25 years ago heard the same story. Tuberculosis is still the most serious health problem confronting any state or community. One cannot overlook the fact that there are still about 500,000 cases in the United States, that tuberculosis is the leading cause of death between the ages of 20 and 40 and that on the average nearly 60,000 persons die of tuberculosis every year.

It is obvious that the crux of any program of tuberculosis control is early case finding by mass X-ray study and immediate segregation of the patient until he is well enough to return to his family and community. If a reduction in the mortality and morbidity from tuberculosis is to be achieved, the full support and cooperation of the general practitioner, the public, industry and public-health agencies are absolutely essential.

Tuberculosis Case Finding, John A. Foley, M.D. and John B. Andosca, M.D., The New England Journal of Medicine, December 5, 1946.

Are chapped bottoms a luxury?—Congressman Chadwick of Pennsylvania received the following:

Sir: I want to thank you for the booklet "Infant Care" that you recently sent my wife. However, if you really desire to be of service, there are several things that would certainly help me and millions of other families.

My wife recently sent me to the drug store to buy some things for the twins, namely, baby oil and baby powder. I found to my immense surprise and disgust that the Federal Government levied an eight cent tax on a bottle of baby oil for a total expense of fifty cents! Questioning the druggist, he stated it was a "luxury tax!" In other words, my babies' chapped bottoms are a luxury! I hope sincerely that every member of Congress has a luxurious bottom! —The Pennsylvania Pharmacist, May, 1948; reprinted in Pennsylvania Medical Journal 51:1034 (June) 1948.

PUBLIC RELATIONS

The practice of medicine is set aside by custom and certain ethical considerations, but the fact remains that physicians are engaged in the business of selling their services to the public.

Particularly since 1932 certain lay groups have undertaken to sell their services by the power of organization and by force, and have ignored the desirability of selling by increasing excellence and efficiency. Many American citizens feel that their doctors are following the same trend and are using legal monopoly, organization, and a scarcity of physicians to force higher fees for less sympathetic service. If any doctor doubts that there is a rapidly growing feeling of resentment toward the medical profession in North Carolina, he should ask a few discreet questions of some of his more intelligent patients.

One of the greatest obstacles met in a long continued effort to improve the methods of administration of the Workmen's Compensation Act has been the rapidly waning respect which the courts, the legal profession, and the employers of labor have for physicians, particularly the specialists. It would be stupid indeed to imagine that our system of practice can continue to survive in an atmosphere of general public hostility. The fact that a governmental bureau is using taxpayers' money in a vigorous campaign to discredit the profession and to stimulate a clamor for state medicine is responsible for much, but not all, of this public dissatisfaction.

Since our system of medical practice can continue to exist only by public favor, security from disaster rests in the provision of better, more considerate, and more economical medical service.

The Medical Society of the State of North Carolina has an excellent Public Relations Committee which is responsible for this most important of its activities. Funds should be provided now for the committee to employ a trained counselor and to begin an active campaign with two general objectives:

- (1) To educate the public in the knowledge that, with all its imperfections, our system of private medical practice, in the American way, is infinitely superior to compulsory insurance or any other sys-

tem of federal control which may ever be devised.

- (2) To show North Carolina physicians that the danger to our profession is grave and immediate and to impress them with the fact that every state official, judge, or lawyer who finds a doctor unmannerly, that every insurance adjuster or other agent of legitimate business who finds a doctor uncooperative, that every representative of a community enterprise who finds a doctor disdainful, that every member of a patient's family who thinks the doctor unkind, that every patient who is kept waiting unduly, and that every patient who thinks he has been charged beyond reason for the service rendered, adds one more to the group of dissatisfied buyers who purchase medical service.

The physicians of North Carolina should seek for security in self discipline and in the expenditure of sufficient effort and money to convert several hundred thousand North Carolinians from critics into "boosters" of the private practice of medicine.

G. W. MURPHY, M.D.

CORRESPONDENCE

PUBLIC RELATIONS

Plymouth, N. C.
June 25, 1948

To the Editor:

In these days of tribulation, with labor frequently against management and nation against nation, it becomes the solemn obligation of each physician throughout our state to see that the doctor-patient relationship is not jeopardized. It therefore becomes apparent that a more widespread interest in this matter should be taken by all physicians. With a realization of the revolutionary changes now taking place in the practice of medicine throughout our country, the following constructive criticism is offered in the hope that it will stimulate more thought and comment from physicians generally, so that the public relations program of our Medical Society may receive the wholehearted support of each physician.

It would seem to me that our best method of tackling the job of public relations is to incorporate a program which would work

in a silent manner insofar as the public is concerned. Inasmuch as the term "public relations" has become more or less synonymous with the word "propaganda," this method of working in a quiet manner would certainly seem to be more advisable. Whenever we bring our faults to the attention of the general public, they immediately become magnified and distorted. One is reminded of going into a home where the housewife begins to apologize for the cobwebs in the lefthand corner of the room and the dirt under the bed. Had she not called attention to these things, in all probability they would have been entirely overlooked. For this reason, it seems to me that giving prizes for essays in high schools is not alone of no real benefit, but actually becomes a destructive force in our public relations program. This certainly was exemplified by the letters of criticism received in these contests, which brought to the attention of the students many of the faults their parents had observed in physicians.

When doctors assume their full responsibilities for night calls and prove to the patient that the personal interest of the patient himself is the doctor's first consideration, then we shall have small need for any committees on public relations in our North Carolina Medical Society.

Yours very truly,
ERNEST W. FURGURSON, M.D.

MEDICAL CARE IN THE EUROPEAN THEATER

Raleigh, N. C.
July 10, 1948

To the Editor:

For five weeks in April and May I made a tour of the European Theater as a Consultant in Surgery for the Surgeon General of the Army. I was impressed with the training program being afforded the medical officers and with the high level of medical care accorded the military personnel and their dependents and the military government and its dependents.

Respectfully yours,
WARNER LEE WELLS, M.D.

Preventive medicine requires the cooperation of the patient, and this in turn predicates the existence of a personal and confidential relationship between the physician, who serves as Health advisor, and the family.—Medicine in the Changing Order, Rep. N.Y. Acad. Med. Comm., The Commonwealth Fund, 1947.

BULLETIN BOARD

NEW HANOVER COUNTY MEDICAL SYMPOSIUM

The New Hanover County Medical Society is completing plans for the second annual medical symposium, to be held at Wrightsville Beach, August 20, 1948. The following speakers will form the nucleus of the symposium:

Dr. George Crile, Jr., Cleveland Clinic, Cleveland, Ohio—surgical paper.

Dr. Edward G. Waters, associate professor of obstetrics and gynecology, Columbia University, and chief of obstetrics of the Margaret Hague Maternity Hospital—paper on obstetrics.

Dr. John S. L. Browne, professor of medicine, McGill University—paper on medicine.

Dr. Harry Walker, associate professor of medicine, Virginia Medical College, will conduct a clinical-pathological conference.

All physicians in North Carolina are invited to attend this year's symposium, and enjoy a week-end at Wrightsville Beach.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Dr. John William Roy Norton, a native of Scotland County, was inaugurated State Health Officer during ceremonies held in the auditorium of the State Laboratory of Hygiene on July 1.

The ceremonies were presided over by Dr. George M. Cooper in the capacity of Acting State Health Officer, and the oath of office was administered by Chief Justice W. P. Stacy of the North Carolina Supreme Court. Dr. Norton was presented for inauguration by Dr. Hubert B. Haywood, of Raleigh, representing the State Board of Health, which elected Dr. Norton at a called meeting, March 31, to succeed Dr. Carl V. Reynolds, whose resignation became effective June 30.

Following his induction into office, Dr. Norton addressed the large gathering of public health workers from Raleigh and all parts of the state present for his induction.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

At the annual dinner meeting of the Board of Directors of the North Carolina Tuberculosis Association, Dr. M. D. Bonner of Jamestown, superintendent of the Guilford County Tuberculosis Sanatorium, was elected president of the Association. Kemp D. Battle, of Rocky Mount, N. C., was elected vice president; and Miss Elizabeth Smith, of Goldsboro, and T. W. Steed, of Raleigh, were re-elected secretary and treasurer, respectively. The following persons were elected to the Executive Committee: Dr. H. L. Seay, Huntersville; Dr. H. F. Easom, Wilson; Dr. Clyde A. Erwin, Raleigh; Roland L. Garrett, Elizabeth City; and Dr. David T. Smith, Durham.

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The North Carolina Trudeau Society, medical section of the North Carolina Tuberculosis Association, was formed on the afternoon of May 17 at the meeting of the medical group attending the annual meeting of the association. The following officers were elected for the 1948-49 year: Dr. J. S. Hiatt, Jr., McCain, president; Dr. W. E. Cook, Mebane, vice president; and Dr. P. A. Yoder, Winston-Salem, secretary-treasurer.

The National Tuberculosis Association has included in its program funds for the establishment of a small number of teaching and research fellowships. The association's medical section, The American Trudeau Society, has appointed a fellowship board to consider applications in the fields of pathology and bacteriology, chemical medicine, epidemiology, social and statistical research. The purpose of the fellowship is to promote the training and development of investigators in tuberculosis research.

The fellowship will be limited to graduates of American schools for teaching and investigating in the United States. While preference will be given to applicants with a Doctor of Medicine or Doctor of Philosophy Degree, the fellowships will not be restricted to the holders of these degrees.

Annual stipends were arranged from \$2400 to \$3200.

Further information pertaining to these fellowships may be obtained from the North Carolina Tuberculosis Association, Raleigh.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Felda Hightower, who has been affiliated with the North Carolina Baptist Hospital and the Bowman Gray School of Medicine since July, 1942, has been promoted from the position of instructor to that of assistant professor of surgery in charge of general surgery.

Dr. Ernest H. Yount, Jr., of Newton has been appointed to the position of instructor in internal medicine.

Dr. John Carroll Wiggins of Winston-Salem has been appointed to the position of assistant in clinical medicine.

Dr. Leslie M. Morris of Rutherfordton has been appointed to the position of instructor in radiology.

Dr. Winston Roberts has recently become affiliated with the Private Diagnostic Clinic of the Bowman Gray School of Medicine and has been appointed instructor in ophthalmology and director of the ophthalmologic service of the North Carolina Baptist Hospital. During the past year Dr. Roberts was resident in ophthalmology at the North Carolina Baptist Hospital.

Dr. J. Richard R. Bobb, instructor in physiology and pharmacology, resigned June 11. He will enroll at the University of Minnesota to complete the requirements for the degree of Doctor of Philosophy.

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Dr. Robert L. McMillan, associate professor of clinical medicine, was recently elected to active membership in the Inter-American Cardiology Congress, which held its third meeting at the Michael Reese Hospital in Chicago, June 13 to 17.

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Dr. David M. Cayer, assistant professor of medicine, presented an exhibit on "Vitamin Requirements in Health and Disease" at the annual meeting of the American Medical Association in Chicago, June 21 to 25.

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The division of research grants and fellowships of the Federal Security Agency, U. S. Public Health Service, has announced:

A grant of \$4,266 to Dr. George T. Harrell, Jr., head of the department of medicine, for continuation of a study started on a Markle grant on the effect of various drugs on the permeability of mem-

branes in infectious diseases.

A grant of \$5,940 jointly to Dr. David Cayer of the department of medicine and Dr. W. E. Cornatzer of the department of biochemistry for a continuation on human beings of fundamental animal studies with the use of radioactive phosphorus as tracers for study of disease processes.

A third grant for \$8,100 for continuation of a study of factors concerned with the development of resistance by bacteria to chemotherapy. Dr. Harrell directed this study last year, and Dr. Manson Meads has been appointed as co-director of the project for this year.

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The department of pediatrics and the department of physiology and pharmacology have received recently a grant totaling \$11,430 from the National Foundation for Infantile Paralysis, for continuance and broadening of a study which employs the use of embryonated chick eggs in the growth of viral and rickettsial agents.

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Dr. Robert B. Lawson, associate professor of pediatrics, Dr. W. M. Kelsey, assistant professor of pediatrics, and Dr. James F. Donnelly, instructor in obstetrics and gynecology, took part in the Southern Pediatric Seminar conducted at Saluda, July 5 to 17.

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An exhibit on egg embryo techniques used for growing viruses was prepared by Dr. Lawson, associate professor of pediatrics, and Ruth Raymond, research assistant, for presentation at the First International Poliomyelitis Conference in New York City, July 12 to 17.

EIGHTH DISTRICT MEDICAL SOCIETY

The Eighth District Medical Society met on June 30 in Greensboro. Speakers at the scientific program held in the afternoon were Drs. J. T. Davis, Ralph Lake, and Sherwood Barefoot of Greensboro, and Drs. Angus Randolph and Robert B. Lawson of Winston-Salem. Papers were discussed by Drs. Clifford W. Lewis and A. R. Cross of High Point, Drs. L. L. Beal, Ralph Ellis, R. E. Perry, Robert Garrard, J. G. Thomas, and Jean C. McAllister of Greensboro, and Dr. William Hester of Reidsville. A dinner for the members of the society and their wives was held after the program.

Officers of the society are Dr. Joseph B. Stevens, president; Dr. R. B. Davis, vice president; and Dr. M. D. Bonner, secretary-treasurer.

TENTH DISTRICT MEDICAL SOCIETY

Ninety members attended the spring meeting of the Tenth District Medical Society, held in Waynesville on June 16. The afternoon program consisted of papers by Dr. John Z. Preston of Tryon, Drs. Nelson L. Bell, E. J. Chapman, and J. LaBruce Ward of Asheville, and Dr. T. H. Weaver of Swannanoa. Discussants were Drs. John T. Codnere, E. D. Peasley, James H. Cherry, and Julian Moore of Asheville, and Dr. George W. Plonk of Murphy. Dr. James Hendrix of the Duke University School of Medicine was guest speaker at the dinner meeting. His subject was "The New Sympatholytic Drugs and Their Therapeutic Uses."

Officers of the society are Dr. V. H. Duckett, president; Dr. Joe Osborne, first vice president; Dr. W. N. Fortescue, second vice president; Dr. Candler A. Willis, third vice president; Dr. B. W. Whitfield, fourth vice president; and Dr. Joseph T. Sullivan, secretary and treasurer. Dr. D. M. McIntosh is councilor of the Tenth District.

CARTERET COUNTY MEDICAL SOCIETY

The Carteret County Medical Society held its regular monthly dinner meeting at the Morehead City Hospital on June 14, with the hospital as host.

The scientific program consisted of a moving picture presented by Mr. Richard Vaden, representative of Abbott, Inc., entitled "Modern Trends in Intravenous Therapy." The technique demonstrated in the picture was unusually good and was well received.

Dr. J. W. Morris, Morehead City, presided as president of the society, Dr. Frank E. Hyde acting as secretary.

Reported by
N. Thomas Ennett, M.D.
Publicity Chairman

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Dr. W. L. Thomas, associate professor of obstetrics and gynecology at the Duke University School of Medicine, was guest speaker at the June meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on June 9.

HALIFAX COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Halifax County Medical Society was held in Roanoke Rapids on June 11. Dr. Arthur L. Daughtridge of Rocky Mount discussed "X-Ray and Radium Therapy."

NEWS NOTES

Dr. Frank H. Gilreath, formerly of North Wilkesboro, died in Lexington, Virginia, on June 19. He was an honorary member of the State Medical Society, but retired from active practice about ten years ago.

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Dr. J. J. W. Looney of Rocky Mount died on May 12, after having been in poor health for several years.

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Dr. H. W. Stevens, health officer of Alamance County, has accepted the position of health officer of Wilson County. He replaces Dr. R. B. C. Franklin, who resigned recently to become health officer of Surry County.

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Dr. Stuart W. Gibbs has joined the Boice-Willis Clinic at Rocky Mount as radiologist.

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Dr. Everett D. Jones, a graduate of the University of Maryland, has announced the opening of offices in High Point for the practice of orthopedic surgery.

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Dr. J. W. Morris of Morehead City was recently elected president of the Morehead City Chamber of Commerce.

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The following doctors from North Carolina registered at the meeting of the American Medical Association held in Chicago, June 22-25:

John M. Andrew, Lexington
L. Nelson Bell, Asheville
John R. Bender, Winston-Salem
Earl W. Brian, Raleigh
A. C. Bulla, Raleigh
John C. Burwell, Jr., Greensboro
Julian Busby, Kannapolis
J. Lamar Callaway, Durham
S. M. Carrington, Oxford

Francis Bayard Carter, Durham
David Cayer, Winston-Salem
John E. Dees, Durham
G. G. Dixon, Ayden
Arthur J. Draper, Charlotte
Charles S. Drummond, Winston-Salem
Watt W. Eagle, Durham
B. O. Edwards, Asheville
Elias S. Faison, Charlotte
J. C. P. Fearrington, Winston-Salem
Leon H. Feldman, Asheville
John H. Foster, Sanford
Dennis Bryan Fox, Albemarle
M. A. Griffin, Asheville
Keith S. Grimson, Durham
George T. Harrell, Jr., Winston-Salem
J. Roy Hege, Concord
James P. Hendrix, Durham
J. O. Henson, Greensboro
Thomas A. Henson, Greensboro
E. H. Herring, Raleigh
Hans Heymann, Oteen
Ralph B. Hogan, Durham
John W. Huston, Asheville
H. B. Ivey, Goldsboro
Arthur A. James, Jr., Sanford
Wingate M. Johnson, Winston-Salem
R. H. Kaplan, Swannanoa
Ben H. Kendall, Shelby
W. H. Kibler, Morganton
David Kleiman, Raleigh
George M. Koseruba, Wilmington
R. F. Leinbach, Charlotte
Kingsley MacDonald, Charlotte
Thomas T. Mackie, Winston-Salem
Harold J. Magnuson, Chapel Hill
James T. Marr, Winston-Salem
Charles C. Massey, Charlotte
J. Gaddy Matheson, Ahoskie
W. C. Parks, High Point
Elbert L. Persons, Durham
Irving Pine, Asheville
Pierre P. Poole, Rocky Mount
R. W. Postlethwait, Winston-Salem
Charles H. Pugh, Gastonia
R. Z. Query, Charlotte
Theodore S. Raiford, Asheville
S. M. Rauchwerger, Oteen
Charles W. Reavis, Greensboro
Robert J. Reeves, Durham
R. W. Rundles, Durham
Julius Sader, Brevard
William E. Selby, Charlotte
Joseph Selman, Winston-Salem
Oliver L. Sharp, Greensboro
Palmer A. Shelburne, Greensboro
Charles F. Strosnider, Goldsboro
Charles W. Styron, Raleigh
Josiah C. Trent, Durham
Wen-Yi Wang, Durham
W. Wyan Washburn, Boiling Springs
Carlton G. Watkins, Charlotte
Ayer Whitley, Matthews
Roebby B. Wilson, Asheville
Barnes Woodhall, Durham
John J. Zannini, Fort Bragg

SOUTHERN MEDICAL ASSOCIATION MEETING

The Southern Medical Association has accepted the invitation of the Dade County Medical Association to meet in Miami, Florida, October 25-28.

(BULLETIN BOARD CONTINUED ON PAGE 365)

BOOK REVIEWS

The Pathology of Nutritional Disease. By Richard H. Follis, Jr., M.D., Associate Professor of Pathology, Duke University School of Medicine, Durham, North Carolina. Price: \$6.75. 310 pages. Springfield, Illinois: Charles C. Thomas, 1948.

In this book the author attempts to describe the physiologic and morphologic changes resulting from deficiencies of dietary essentials. The material is divided into five headings, which include dietary deficiencies in general, and deficiencies of essential elements, of amino acids, of fat- and water-soluble vitamins, and of fatty acids. A summary of the pathology of specific tissues and an extensive bibliography and subject index complete the volume.

Clinical application of much of the information will be difficult, since it deals largely with experimentally produced deficiencies and with the physiologic and biochemical changes which precede the anatomic and clinical changes that are still the primary basis for clinical diagnosis and therapy. The author wisely points out that most of the data previously accumulated have been analyzed on the basis of dietary observations which are inadequate by present-day standards. Dr. Follis has managed to maintain a good balance between what he describes as "nutritional nihilism" and "vitamin inflation." The tremendous amount of literature on the subject permits only a brief introduction to each section and a presentation of the high lights of the problem.

The book illustrates well the necessity for combining the efforts of the histologist, biologist, chemist, pathologist and internist in the investigation of metabolic disorders and diseases. It will be of interest to pathologists and to workers in nutrition, biochemistry, and physiology.

The Spleen and Hypersplenism. By William Dameshek, M.D., and Solomon Estren, M.D., J. H. Pratt Diagnostic Hospital, Tufts College Medical School, Boston, Massachusetts. 55 plates in plastic binder. Price, \$4.75. New York: Grune & Stratton, 1947.

To those familiar with the previous outline monograph on **Hemolytic Syndromes** published by the senior author, this new and similar work will need no added recommendation. It presents in book form an exhibit shown at the centennial meeting of the American Medical Association held in June of 1947.

This subject is presented in diagrammatic, outline form, with excellent illustrations covering the anatomy, physiology, and histology of the spleen. The clinical disorders producing splenomegaly and "hypersplenism" are listed, with illustrative historical notes, case reports, and laboratory data. In clear, concise fashion the theoretical mechanisms are elaborated, conclusions drawn, and the end results of medical and surgical therapy noted. Taking a difficult, poorly understood and controversial subject, the authors have clarified and simplified the clinical approach to diagnosis and the use of laboratory studies, and have noted the pathologic physiology and rationale for treatment.

This book is a "must" for all medical students, internists, and surgeons who are interested in the treatment of hematologic disorders.

Psychobiology and Psychiatry. By Wendell Muncie, M.D., practicing psychiatrist; Chairman, Medical Advisory Board, Seton Institute, Baltimore; Associate Professor of Psychiatry, Johns Hopkins University; Consultant in Psychiatry, U.S.V.A. Ed. 2. 620 pages, with 70 illustrations. Price, \$9.00. St. Louis: C. V. Mosby Company, 1948.

The first edition of this book was written in response to a request from the publishers for a text of psychiatry presenting the concepts developed in the Phipps Psychiatric Clinic of the Johns Hopkins University. Dr. Muncie was selected by Dr. Adolf Meyer as the one best fitted for the task. The second edition was, in Dr. Muncie's words, "extensively edited in the light of my recent years devoted largely to private practice." It is logically divided into three parts. Part I is devoted largely to psychobiology—the study of normal behavior. Part II deals with abnormal behavior—pathology and psychiatry. Part III outlines the treatment of various psychiatric conditions, ranging from the psychoneuroses to paranoia.

The amateur psychiatrist will be somewhat confused by the use of such terms as merergasias instead of psychoneuroses, oligergasia instead of mental deficiency, and thymergasia instead of manic-depressive psychosis. The author explains the reasons for the less familiar terminology, but one can not help wondering if the love of so many psychiatrists for sonorous and polysyllabic words does not discourage many capable family doctors from learning more about the workings of the human mind.

The case reports are most illuminating; but, even though the author states that this edition was extensively edited in the light of his recent experience, nearly all these reports deal with patients treated years before shock therapy was used. The impression left on the reader would have been less depressing had the author included a goodly proportion of cases cured or helped by more modern methods. The section on treatment is more up to date and should help to counteract the depressing effect of the case histories given in Part II.

The book is a valuable contribution to the psychiatric literature, since it reflects the influence of Dr. Meyer and his associates upon the care of the mentally sick. It is doubtful, however, that the average physician not versed in the language of the professional psychiatrist would be greatly interested in it.

Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics. By Alfred Korzybski. Ed. 3. 806 pages. Price, \$8.00. Lakeville, Connecticut: The International Non-Aristotelian Library Publishing Company. The Institute of General Semantics, Distributors, 1948.

As is indicated by its subtitle, this book purports to supersede Aristotelian logic and its unconsciously implied metaphysics by initiating the empiric study of the psycho-physiologic processes of abstraction and evaluation, especially in so far as they determine the sanity (adjustment to the total environment) or "un-sanity" of the human organism-as-a-whole. Thus Korzybski's work is as pertinent to psychosomatic medicine as to epistemology, and is apt to find more enthusiastic acceptance among physicians than among philosophers.

In this one volume the author attempts a system as comprehensive as those of the classical philosophers by seeking the methodologic common denominator of the most recent and rapid advances in such

varied sciences as relativity physics, quantum mechanics, colloid chemistry, physiology, and neurology—a system, moreover, whose adoption will have observable survival-value for individual and society. In the fifteen years since the first edition of *Science and Sanity* was published, general semantics has been further developed through an Institute holding semiannual seminars, promoted by an International Society publishing a quarterly review, taught at Northwestern, Iowa, and other universities, and therapeutically applied to some psychiatric cases by Drs. D. M. Kelley, D. G. Campbell, P. S. Graven, and others.

A book whose author has been put in the class of contemporary intellectual revolutionaries with Einstein and J. M. Keynes should not be dismissed casually; but a book written in such a repetitious, legalistic style can not be read casually. The interested novice would do well to begin his study of general semantics with a more readable exposition—such as *People in Quandaries* by Wendell Johnson. One important reminder: General semantics is not a study of the meanings of words. It is an empiric study of (1) the "structure" of languages (national, technical, and mathematical) and (2) their suitability to (a) the human being using them and (b) the non-linguistic phenomena for which they are used.

BULLETIN BOARD

(CONTINUED FROM PAGE 363)

THE AMERICAN COLLEGE OF PHYSICIANS

Research Fellowships

The American College of Physicians announces that a limited number of fellowships in medicine will be available from July 1, 1949 to June 30, 1950. These Fellowships are designed to provide an opportunity for research training either in the basic medical sciences or in the application of these sciences to clinical investigation. They are for the benefit of physicians who are in the early stages of their preparation for a teaching and investigative career in internal medicine. Assurance must be provided that the applicant will be acceptable in the laboratory or clinic of his choice and that he will be provided with the facilities necessary for the proper pursuit of his work.

The stipend will be from \$2,200 to \$3,200.

Application forms will be supplied on request to The American College of Physicians, 4200 Pine Street, Philadelphia 4, Pa., and must be submitted in duplicate not later than November 1, 1948. Announcement of the awards will be made as promptly as is possible.

* * * *

Annual Session

The American College of Physicians will conduct its Thirtieth Annual Session at New York, March 28 through April 1, 1949.

Secretaries of medical societies are especially asked to note these dates and, in arranging meeting dates of their societies, to avoid conflicts with the College meeting, for obvious mutual benefits.

AMERICAN COLLEGE OF SURGEONS

The thirty-fourth Clinical Congress of the American College of Surgeons will be held in Los Angeles, with headquarters at the Biltmore Hotel, October 18 to 22, 1948.

AMERICAN HEART ASSOCIATION

Plans for the formation of new local heart associations and the broadening of research to accelerate the nationwide campaign against diseases of the heart and circulation were discussed at the Twenty-Fourth Annual Meeting of the American Heart Association, held in Chicago, June 16-21. The five-day schedule included the Twenty-First Scientific Sessions of the Association on Friday and Saturday.

LIFE INSURANCE MEDICAL RESEARCH FUND

An additional \$103,000 in research funds for heart disease has been announced by the Life Insurance Medical Research Fund, raising to nearly two million dollars the amount provided by the Fund since it was organized in December, 1945. The awards, announced by M. Albert Linton, chairman of the Fund, include twelve student fellowships, three post-graduate fellowships, and nine grants-in-aid to hospitals and universities.

Two grants-in-aid went to Duke University, one for research by Dr. Philip Handler and Dr. Frederick Bernheim on dietary protein levels and renal hypertension, and one for research by Dr. Walter Kempner on the effect of diet on mineral metabolism in renal and hypertensive disease. One student research fellowship went to Lewis Franklin of Chillicothe, Ohio, to work under the supervision of Dr. Harold D. Green at the Bowman Gray School of Medicine of Wake Forest College.

THE JOHN AND MARY R. MARKLE FOUNDATION

Nearly \$460,000 was appropriated by the John and Mary R. Markle Foundation last year, chiefly to medical colleges and universities for research. This sum brings the total grants of the Foundation in the twenty years since its founding to approximately \$11,000,000, John M. Russell, executive director, stated in the fund's annual report.

These appropriations made during the year for medical research are on a terminal basis, because of a change in the Foundation's program. The new program, already in operation, will aid selected young scientists seeking careers in teaching and research in medical schools. Grants of \$25,000, payable at the rate of \$5,000 annually, will be made to cooperating medical schools where the Scholars will hold faculty appointments. Sixteen Scholars in the United States and Canada were appointed in the spring of 1948. If the program proves successful, a total of \$1,250,000 will be appropriated for the support of Scholars during a five-year period.

TWENTY-FIRST ANNIVERSARY YEAR OF HAROFÉ HAIVRI

The Hebrew Medical Journal Volume I—1948

The appearance of Volume I—1948 of the *Harofé Haivri*, The Hebrew Medical Journal, inaugurates the twenty-first successful year of its publication under the editorship of Moses Einhorn, M.D. The Journal's contents are not confined to technical medical topics but are divided into several sections covering a variety of related subjects of interest to the medical profession.

The original articles are summarized in English to make them available to those who are unable to read Hebrew. For further information, communicate with the editorial office of the Hebrew Medical Journal, 893 Park Avenue, New York 28, N. Y.

NAVY'S NEW MEDICAL TRAINING PROGRAM

The Surgeon General of the Navy has announced the expansion of the Bureau's professional training program for reserve and regular medical officers, which is similar to the recently expanded Army medical training program. The object is to permit more Navy doctors to meet the requirements for certification by the various American specialty boards, and to encourage the young doctor to intern under the auspices of the Navy. The following are the important points in this program:

Graduates of Class A medical schools who have been accepted for internship by a hospital approved for such training by the Council on Medical Education and Hospitals of the A.M.A. may be commissioned as lieutenants (junior grade), MC, USNR, and permitted to continue their intern training. They will receive all the pay and allowance of the rank while so serving. After completing their internships, the medical officers must remain on active duty for a period of one year. If they meet the professional, physical and moral requirements, they will be given every encouragement to transfer to the regular Navy.

Interns who have completed the one year of obligated service, and who have transferred to the regular Navy, may be considered for residency training on a competitive basis with other officer personnel of the regular Medical Corps.

Resident physicians now in civilian hospitals, or those accepted for approved residency training, are eligible for commissions in the regular Navy. Those so commissioned will be assigned to duty, with full pay and allowances, in the hospital in which they are already a resident, or to which they have been accepted for residency training. Every attempt will be made to permit residents holding commissions in the regular Navy to complete their training in event of an emergency.

The Navy has at the present time 400 approved residencies and fellowships in the various specialties recognized by the American Specialty Boards in Naval and civilian hospitals.

Information concerning any part of the program may be obtained by writing to the Chief of the Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

VETERANS ADMINISTRATION

Improved techniques in the care of mentally-ill veterans are enabling Veterans Administration, for the first time in many years, to discharge about as many patients as it admits to its neuropsychiatric hospitals. During a recent ten-month period (July 1947 through April 1948) 1,060 more NP patients were discharged from hospitals than were admitted. During this period, a total of 51,210 patients were admitted for care and 52,270 were discharged as improved or cured. This is an indication that improved methods of care and establishment of more mental hygiene clinics for out-patient treatment have enabled VA to keep its hospital load of mentally-ill from increasing substantially.

* * * *

Veterans of peace-time service in the regular military or naval establishment, who served six months or more and who received honorable discharges, are now entitled to certain presumptions of service-connection for compensation purposes where tropical diseases become manifest after discharge. Veterans Administration has announced,

WANTED BY THE FBI

Hugo Bob Hubsch, with aliases Robert C. Glass, R. C. Harris, Hogo Hobsch, Louis S. Miller, is being sought by the Federal Bureau of Investigation. On November 7, 1945, a Federal Grand Jury at Jackson, Mississippi, returned an indictment charging this man with a violation of the National Stolen Property Act. He is charged with another violation of the National Stolen Property Act in a complaint filed with a U. S. Commissioner at Birmingham, Alabama, on June 7, 1948. This individual has defrauded numerous physicians and hospitals in Eastern and Southeastern sections of the United States during the past few months through the medium of fraudulent checks.

Investigation has revealed that Hubsch has a chronic kidney ailment and it has recently been ascertained that he has a large kidney stone in the right ureter about four inches below the kidney. This condition has caused local inflammation which, at varying intervals, results in almost unbearable pain. He has been advised that it would be necessary for him to undergo major surgery for the removal of the stone in the near future and until that surgery is performed he will need frequent, if not continuous, medical attention. This fugitive moves about rapidly in that section of the United States which is east of the Mississippi River, and recently he has given numerous physicians and hospitals fraudulent checks in return for treatment, hospitalization, sedatives and narcotic prescriptions.

The following is a composite description of Hugo Bob Hubsch: Age, about 52, claims to have been born Budapest, Hungary, November 4, 1895; height, about 5' 6"; weight, 140 to 170 lbs.; hair, dark brown, graying; eyes, brown; build, medium; race, white; nationality, believed to be naturalized American; occupations, laborer, pharmacist; scars and marks, left arm partially paralyzed, needle scars on both arms, large scars above each hip resulting from kidney operations, shrapnel scars and two bullet scars on abdomen, bridge in upper front teeth; characteristics, long nose, stooped posture.

Anyone having information concerning the whereabouts of this fugitive should immediately notify the nearest office of the Federal Bureau of Investigation or his local law enforcement agency.

Enjoy Your Child—Ages 1, 2, and 3, by James L. Hymes, Jr., is Pamphlet No. 141 in the series of popular, factual, 20-cent pamphlets issued by the Public Affairs Committee, Inc., a non-profit, educational organization at 22 East 38th Street, New York 16, N. Y.

COMPLETE 1947 EQUIPMENT FOR SALE

Complete examining, treatment, office and reception rooms, furnishings and instruments for the diagnostic and therapeutic requirements of general practice, to be sold immediately. Equipment purchased brand new, in use less than one year. Impossible to duplicate this lot today at its last year's purchase price. May be had in present location in beautifully decorated suite or moved wherever desired. Total asking price \$2900.00. For appointment to see offices as equipped, at 49½ Main Street, Hamlet, North Carolina, telephone or write Mr. T. A. Morris or Dr. B. W. Williamson.

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PHYSICAL METHODS OF TREATMENT IN PSYCHIATRY AND THEIR IMPLICATIONS TO GENERAL MEDICINE

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DURHAM

As a visitor from England working at Duke Hospital during this past year, I feel it a very great honor to have been asked to address this Society here today.

In the time available it will be possible, of course, to touch on only a few of the recently developed physical methods of treatment in psychiatry. That these developments have implications to general medicine is obvious, because the problems of the psychiatrist and other members of the medical profession constantly overlap. The family doctor deals with greater numbers of psychiatric patients than the psychiatrist does. Forty per cent of the hospital beds in both England and America are now filled with patients of psychiatrists, and psychiatric problems are involved in around a third of all cases seen by all types of doctors.

With a few notable exceptions, such as the malaria treatment of general paresis, the possibilities of specific treatments for the psychoses were, until a few years ago, regarded by psychiatry with cautious pessimism. At the same time psychiatrists were perhaps overoptimistic about various forms of psychotherapy for the neuroses. The last ten years have reversed the picture to a considerable extent. The war showed clearly that many neuroses, even those of recent origin, did not respond to theoretically correct psychotherapy; at this meeting last

year, for instance, Dr. Hohman drew your attention to the extent of the present war neuroses still persisting in veterans⁽¹⁾.

Meanwhile physical methods of treatment have been developed which hold out real hope of relief for many patients with psychoses, especially in their early stages. Physical methods have also helped to fill some of the gaps left by psychotherapy in the treatment of neuroses. Combining all our therapeutic resources, using physical and psychologic methods together where necessary, we now have a much better chance to prevent a patient from becoming a lifelong mental invalid.

Wartime Experience with Physical Methods

On having to leave the pleasant life of America at the outbreak of our war with Germany in 1939, I was sent, on my return to England, to work in an emergency treatment center for psychiatric patients at Sutton on the outskirts of London. Two hundred and fifty beds for neuroses and psychoses had been attached to a general emergency hospital unit, and this was to form one of the evacuation centers of the Maudsley Hospital for the duration of the war. Here we were able to learn how to treat psychiatric patients in a general hospital atmosphere, with enough beds available for research, and with facilities for real cooperation with general physicians and surgeons.

*Read before the First General Session, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

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1. Hohman, L. B.: The Emotional Toll of Combat Experience. North Carolina M. J. 8:631 (Oct.) 1947.

In the eight years before I returned to this country for another visit, no less than fifteen thousand psychiatric patients had passed through this unit. One would be fortunate to get this amount of practical treatment experience again in an ordinary lifetime.

From 1940 onward it was obvious that if we were to succeed in getting the maximum number of military and civilian casualties as well as possible in the time at our disposal, we would have to try to find the "short cuts" in therapy. It was then that we found these new physical methods so useful. In the acute neuroses resulting from the London Blitz, the Battle of Britain and the Dunkirk evacuation, we observed quickly how often such treatments as emergency sedation, continuous sleep, restoration of lost weight by the use of modified forms of insulin therapy, and the intravenous administration of barbiturates added to the value of, and sometimes supplanted, established psychotherapeutic methods⁽²⁾. Through the cooperation of Dr. Lloyd Thompson, Psychiatric Consultant to the European Theater of Operations, American hospitals in England tried out these methods on a large scale. As a result they became almost universally adopted later by both British and American armies in Europe.

Though many neuroses today lack the acute quality that contributed to the success of these methods of treatment then, there are still many neurotic patients who benefit when such methods are used in conjunction with other types of treatment. To carry them out, however, it is often necessary to have beds outside mental hospitals. In our emergency unit we allowed no locked doors or barred windows, and opportunities for suicide were always present. But the atmosphere of the hospital was more conducive to recovery because of the risks we ran with open eyes. We were also able, thereby, to persuade many patients with early psychosis, who knew they were ill but were not yet at the stage of commitment, to come to the hospital early for treatment.

Insulin Shock Therapy

Insulin shock therapy is the first physical method I want to talk about today. Before the war it had been developed as a promising method of treatment for early schizophrenia. At Sutton Emergency Hospital

we *really* were able to admit patients early in the course of this disease, and we found that some quite severe cases could be handled in a general hospital setting because of the rapid mental improvement so often brought about by this method.

A high degree of training and medical skill is required to carry out insulin shock therapy well. Numerous problems are involved which demand the help of physicians and biochemists. Though it cannot be considered a cure of schizophrenia, it is the best weapon available at present for the treatment of the early case. Figures from the New York State Hospitals show, for instance, that 1000 patients had their illness shortened by an average of three months compared to an untreated control group. Eighty per cent of the patients treated by insulin shock and only 59 per cent of the untreated patients were able to leave the hospital after treatment⁽³⁾. English figures confirm these findings; and though patients often have relapses, a recent survey done by another American hospital shows that each of the patients treated has been saved an average of 422 days of hospitalization during the subsequent five-year period.

What we saw so clearly at Sutton was the supreme importance of early treatment for getting the best results, and we had the chance to give it⁽⁴⁾.

Electric Shock Therapy

Just before the war electric convulsion therapy—the giving of a series of electrically induced epileptiform convulsions—had been introduced. It was hoped that this might supplant insulin in the treatment of schizophrenia. Published figures, and the clinical observations of those of us who have been able to use and compare both methods over some years now, show that this is not the case. Electroshock treatment, however, is a useful supplement to insulin in schizophrenia, and the best results are obtained if these two treatments are combined when patients do not respond to either individually⁽⁴⁾.

Where electroshock has really revolutionized the practice of psychiatry in recent years has been in the treatment of depressions of middle and later life. Before its

2. Physical Treatment of Acute War Neuroses, Brit. M. J. 2:374, 1942.

3. New York State Temporary Commission on State Hospital Problems: Insulin Shock Therapy: Study, New York, 1944.
4. Sargant, W. W. and Slater, E. T. O.: Physical Methods of Treatment in Psychiatry, ed. 2, Baltimore, Williams and Wilkins, 1948.

introduction a depressive illness might cause a year or two of incapacity sufficient to destroy a business future at the height of potential earning power and domestic responsibility. Now the illness can often be terminated in a matter of weeks instead of months or years. The earlier the treatment is instituted in suitable cases the better the patient does generally, and the greater the possibility of avoiding commitment and more drastic therapy later. We found that patients would come into our unit early for this treatment instead of wasting valuable months at home before commitment was acceptable to the families concerned. They did not feel they were being "put away." Many suicides were also avoided.

An even greater advance is the electroshock treatment of many patients on an outpatient basis. I have run such a clinic for depressive patients in London since 1942. They may have to come for treatment once or twice a week, and in a matter of a month or more they are often fit to return to work without hospitalization at all.

Depression of later life, one of the most tragic things to befall a man during well earned retirement, often responds just as dramatically. Despite the apparent severity of the treatment, it seems remarkably well tolerated by patients up to the age of 70 or more.

Drug Therapy

I wish I had the time to discuss some of those other recently developed physical methods which we have learned from general medicine, and which may mean much to the individual patient. Among these are the use of nicotinic acid for the psychiatric states associated with pellagra, the use of estrogens for certain menopausal patients, and the development of the barbiturates to replace the more dangerous bromides in the humanitarian relief of symptoms for those who can get it in no other way. There are also the various techniques of using intravenous barbiturates for psychologic investigation and treatment.

Prefrontal Leukotomy

One physical advance, however, must be discussed before we try to draw some broad general conclusions. This is the operation of prefrontal leukotomy. With most of the methods I have mentioned there is a considerable liability to relapse and the possibility of failure in retreatment; they only restore

the "status quo" of the individual, and do not always succeed even in doing that. Leukotomy often does much more. It may relieve permanently one of the main causes of psychiatric breakdown and psychosomatic illness, because it reduces the brain's ability to respond to external and internal stress with pathologic anxiety. The operation consists in severing certain tracts between the frontal lobe and the thalamus. Thus, in many forms of illness where tension and painful rumination of thought—what Arnot⁽⁵⁾ has termed "tortured self concern"—are the outstanding symptoms, this operation brings about results which were not even dreamed of in our specialty a few years ago.

At first the operation was subject to much theoretical criticism and was therefore confined to the most hopeless, deteriorated, and chronic cases of mental disorder. But we have learned that the better preserved the general personality of the patient at the time of operation, the better is likely to be the final result. The operation does not affect intelligence to any great extent, but it does alter emotional outlook.

Working in a general hospital atmosphere we were better able to admit patients for study and eventual operation who had chronic disabling illnesses but were still well enough to remain at home, if necessary, as the alternative to hospitalization in an institution for mental patients. In my opinion, some of the patients best suited for this operation never see the inside of a psychiatric hospital. Chronically anxious, restless, hypochondriacal, and frequently preoccupied with vague bodily complaints, they become a misery to themselves and their families for years on end, and are a trial of endurance to the doctor who has to attend them.

In the past six years our results with leukotomy in the treatment of some chronic intractable neuroses and psychoses have been satisfactory. After every other form of therapy had failed, many patients have been able to return to such jobs as those of skilled cooks, real estate agents, calculating machine operators, secretaries and the like. Two patients of an English colleague of mine, both of whom had intractable states of persistent tension, are now working, one as a successful cinema manager and the other as a skilled draughtsman. Furthermore, in the less severe forms of mental disorder, less exten-

5. Arnot, R. E.: Personal communication.

sive operations need to be done, which do not carry with them some of the undesirable personality alterations brought about by the major operations necessary for the more severe chronic psychoses.

Even in mental hospital patients, who may have been confined in an institution for long periods, the results of leukotomy have been startling. The British government, through its Board of Control for Lunacy, recently published the findings revealed by an inquiry into the results of the first 1000 leukotomies done in all mental hospitals in Britain⁶. A third of the patients who had had the operation had been able to leave the hospital. Half the patients with chronic depression treated by leukotomy had also been discharged according to the Board of Control Report, including those over the age of 65. Most of these cases were the failures or relapses of shock treatment. But another most important finding did emerge. Whereas only 20 per cent of the patients with schizophrenia of more than two years' duration were fit to leave the hospital, 50 per cent operated upon before that time were able to go home. The vital importance of early active treatment in this particular illness is again obvious.

Such recent findings, both in England and in America, confirm the belief that this physical treatment is one of the greatest *practical* advances of the century in psychiatry. It will be even more useful when neurosurgeons and neurologists help us to learn how it may be further modified so as to keep its benefits and do away with the sometimes deleterious effects on other aspects of personality. But even these effects are not sufficient usually to contraindicate this method when no other holds out hope of a permanent relief from lifelong suffering and incapacity.

Implications for General Medicine

What then are the implications of these methods to all of us here? There are many, and I shall have to try to summarize them. First, patients must be sent for treatment early, and it must be possible sometimes to treat them in general hospital units such as the one at Duke. Since these treatments are introducing numerous problems of biochemistry, neurosurgery, physiology and the like, the help of specialists in other fields is often needed. Psychiatrists are also learning that

they have to become good all-round doctors again to be entrusted with treatment along lines that have been derived from general medicine and surgery. This may involve re-learning, in such an atmosphere, the making of good medical and surgical judgments, including, when necessary, the taking of calculated risks in treatment that are now commonplace in ordinary medical practice.

Furthermore, I believe that such methods are providing the best possible bridge over which psychiatry can return to a general medical outlook instead of being a specialty apart, talking a strange language, and sometimes adopting what may seem bewildering attitudes to the ordinary doctor. Most important of all, we are gradually learning—or should be learning—that some of the greatest practical advances in psychiatry happen where we approach both our problems and our treatments on the same broad basis of attack that has brought about such stupendous progress in medicine and surgery in the last hundred years. If some of our methods are crude at present, it may be because psychiatry is still at the phase of development which characterized medicine and surgery of the early nineteenth century. If so, we shall need your guidance more than ever in the future.

These new advances have shown how specific varied treatments are for the different symptoms of mental disorder. Some can do great injury to the wrongly selected patient. They are as potentially harmful and yet as beneficial as the surgeon's knife, and they have to be used with the same precision and judgment. If those qualities of careful diagnosis; skilled handling of patients, and their selective treatment along a variety of lines are to be fully developed, we must follow attitudes similar to those of general medicine, and stop looking for the universal psychiatric theory or panacea of treatment still common in certain types of psychiatric teaching today.

These methods should also reduce the burden of work for us all. As I said previously, family doctors have to handle many more psychiatric patients than psychiatrists do. Physical treatments produce their beneficial effects with greater speed and certainty, where they are specifically indicated, than do the psychotherapeutic methods in the same patient. Often both can be combined as in general medical practice. When we can really help a patient, we lose that sense of

6. H. M. Board of Control Report: Prefrontal Leucotomy. London, H. M. Stationery Office, 1947.

irritated frustration, often projected towards the patient himself, which makes many general physicians try to avoid the psychiatric patient whenever possible. Dr. George Sutherland⁽⁷⁾ suggests that it was the same with tuberculosis before the tubercle bacillus was discovered and methods of treatment were developed which held out real hope for the patient if he could be guided along the right channels to specialized help, with the practitioner later cooperating in worthwhile after-care.

When you send your patients to psychiatric hospitals and clinics, I hope you will see to it that they do get the opportunity for treatment by all such methods if necessary. Relatives will generally consult you and take your advice on such matters. When you find that your patients are not being so treated, I hope you wax just as indignant as when you send others to hospitals for surgical operations, to find that there are no proper surgical facilities available. Without a vociferous protest from the whole profession I do not believe that many of the psychiatric hospitals will ever get out of their present doldrums and their unhappy existence largely as institutions for confining patients, many of whom could be treated and discharged if only proper facilities were made available. In a few mental hospitals in England, for instance, no facilities are yet provided for leukotomy. It is the same in the State Hospitals of North Carolina. The facts I have given you today about this treatment alone suggest the consequent and avoidable suffering involved for so many patients and relatives concerned, and the quite unnecessary economic loss to the community.

Conclusion

I hope I have not painted too optimistic a picture while trying to present a hopeful one based on facts learned in the day-to-day bedside treatment of patients. As in general medicine, there are still many patients for whom we can do all too little. But we do now have some better tools, and we need better opportunities to use them. In this matter we need your help and cooperation.

If these physical treatments, apart from any other contributions they make, also provide the common ground on which psychiatrists and general physicians can walk to-

gether again, talk the same language, and so deal better with a problem that looms so large in the present practice of medicine, further progress will not be far ahead.

THE PATHOGENESIS, DIAGNOSIS AND TREATMENT OF THE ACUTE PHASE OF POLIOMYELITIS

WILLIAM F. FRIEDEWALD, M.D.*

ATLANTA, GEORGIA

Poliomyelitis has been the subject of intensive study, particularly during the last ten years. Although much has been learned, we still do not fully understand many of the factors involved in the complex mechanism of this disease. Furthermore, we are greatly handicapped by the lack of suitable laboratory methods for accurate diagnosis. In this discussion an attempt will be made to summarize and to evaluate present-day concepts regarding certain aspects of poliomyelitis.

Pathogenesis

The virus of poliomyelitis apparently enters the host by way of the mouth and passes into the gastrointestinal tract, where it may establish itself and multiply. Although the virus may be recovered from the tongue, the pharyngeal wall, and the large and small intestine, the greatest quantity of virus is found in the small intestine. The virus is only rarely found in the nose, and the characteristic lesions of poliomyelitis are not seen in the olfactory bulbs of human beings. These findings indicate that the nose is not an important portal of entry of the virus to the central nervous system.

Apparently the virus is widespread in the population during epidemic periods, and can be found in the feces of a large proportion of individuals without manifest illness. The virus persists in the feces for periods varying from a few weeks to several months. It would appear, therefore, that the alimentary tract is the primary site of attack and invasion of the virus. There is no general agreement, however, as to the manner in which the virus is spread through a population. Although it has been demonstrated in feces, sewage, water, flies, and food, the importance

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* Professor of Bacteriology and Associate Professor of Medicine, Emory University School of Medicine, Atlanta, Georgia.

7. Sutherland, G.: Personal communication.

of these possible modes of spread has not been determined. Another possible method of disseminating the virus is by coughing or sneezing, since the virus may be present in the nasopharynx. Emphasis at the present time, however, is on transmission by feces.

The virus presumably passes beyond the alimentary tract by way of the nerves and travels centripetally up the axons to the central nervous system. The cranial nerves V, VII and IX (oropharynx) and X (intestinal tract), as well as the sympathetic or visceral afferents to the cord, appear to be the usual pathways to the central nervous system. The virus then spreads along other nerve cells, damaging the anterior horn cells of the cord and in some instances various parts of the brain, including the pons and medulla, mesencephalon, diencephalon, and motor cortex.

Various other factors are involved in the pathogenesis of poliomyelitis. The highest incidence of the disease occurs during the summer months. Fatigue, chilling, and pregnancy appear to be predisposing factors. There seems to be little doubt that tonsillectomy performed during an epidemic period enhances the susceptibility to bulbar poliomyelitis.

Although poliomyelitis is world wide in its distribution, large seasonal epidemics are limited to certain countries—namely, the United States, Scandinavia, Holland, Australia, and New Zealand. Recent studies have brought out the interesting finding that epidemics in these countries have arisen within the last seventy years.

Diagnosis

At the present time the diagnosis of poliomyelitis is almost entirely dependent on clinical findings. In considering the manifestations of acute poliomyelitis, it must be emphasized that the disease is primarily systemic in nature and that involvement of the central nervous system, although it is the most characteristic feature of poliomyelitis, occurs in only a small percentage of patients. The onset is similar to that of many acute illnesses: malaise, headache, low-grade fever, a mild soreness of the throat, nausea, and occasionally vomiting. After one to three days, the fever and symptoms subside, to be followed in one to seven days by a more severe illness, with an exacerbation of the initial symptoms and signs of central nervous

system involvement. This sequence of events gives rise to the biphasic fever curve. It should be pointed out, however, that this biphasic illness is recorded in only about a fifth of the cases, probably because the initial illness is so mild and nonspecific that it is overlooked by the patient. Furthermore, there seems to be little doubt that in a large number of patients the disease does not progress beyond the initial mild illness; such patients have no signs of central nervous system involvement, and the spinal fluid findings are negative. This type is frequently referred to as *abortive poliomyelitis*.

In the second phase of the febrile disease, the patient appears acutely ill, is apprehensive, hyperirritable, and sweats profusely. Headache is a prominent symptom, particularly in adults, and is frequently associated with vomiting. The temperature is usually 101 to 103 F., but may be higher in the bulbar or encephalitic type of the disease. Varying degrees of spasm and pain in the muscles of the neck, back, and posterior thighs are observed, with stiffness of the neck and back. Attempted flexion of the neck or back is painful. The Kernig test is usually positive. Here again, the disease may terminate. This type is referred to as *nonparalytic* or *preparalytic poliomyelitis*.

Spasm, weakness or paralysis of other muscles depends on the distribution and severity of the lesions in the central nervous system, and occurs usually between the second and fifth day of the febrile illness. It is characteristic of poliomyelitis that the muscle involvement is patchy in its distribution, affecting a group of muscles, an individual muscle, or a portion of a particular muscle. The lower extremities are most commonly involved, although any of the muscles of the thorax, abdomen and extremities may be affected. *Muscle spasm* can be felt by palpation and can be emphasized by gentle stretching. The paralysis is flaccid in type, and its distribution does not coincide with the areas of spasm or sensitivity. It has the characteristics of a lower motor neuron paralysis and is most variable in its extent and distribution. The abdominal and deep reflexes are variable, but frequently are depressed or absent. *Deformities* may be observed in the extremities, back, and pelvis when muscles are not balanced in strength as a result of spasm or paralysis. When the

paralysis is total, the part adopts a flail position.

Clinical manifestations referable to involvement of the medulla and base of the brain occur in only a small proportion of patients. This type is referred to as *bulbar poliomyelitis* and presents the gravest manifestations of the disease. One or more of the motor cranial nerves may be affected, causing lid lag, strabismus, facial paralysis, and paralysis of the palate, pharynx, tongue, or larynx. More serious, however, is involvement of the respiratory center and the circulatory center. Involvement of the respiratory center is manifested by anxiety, restlessness, increasing pulse rate, and variations in the rate and depth of respirations, with prolonged intervals between inspirations. As failure of the center progresses, there is confusion, delirium, and coma, with increasing periods of apnea and Cheyne-Stokes respiration. Atelectasis, pulmonary congestion, and cyanosis are common at this stage. Patients with involvement of the circulatory center present a dusky red appearance, a rapid pulse (150-200) which is irregular and thready, and a pulse pressure which may be as low as 10 mm. of mercury. As circulatory failure progresses, the blood pressure drops to shock levels, the pulse is imperceptible, and the skin cold and clammy. Delirium, coma, and hyperthermia are seen in the terminal stage.

A more diffuse involvement of the brain gives rise to the *encephalitic* form of poliomyelitis in which anxiety, hyperexcitability, muscular tremors and twitching, delirium, coma, and occasionally convulsions are the principal symptoms.

The acute febrile illness in the various forms of poliomyelitis usually does not last longer than four to seven days, and during this time the muscle paralysis reaches its maximal extent. Muscle spasm and pain may continue, however, for another week or two after the fever has subsided.

The great need for a specific diagnostic test becomes obvious when it is realized that most cases are of the abortive or nonparalytic type and are difficult to differentiate from other infectious diseases. The *virus* may be isolated from the stools of patients by inoculation of monkeys, but this procedure is expensive, time-consuming, and requires technicians with special skills and experience. Neutralization tests with mouse-

adapted strains of poliomyelitis have not proved to be of any value in diagnosis.

The spinal fluid is usually clear or only slightly hazy, and under normal or slightly increased pressure. The cell count in both paralytic and nonparalytic infections ranges from 10 to 500 per cubic centimeter, but is usually less than 100 cells per cubic centimeter. The predominant cells are small lymphocytes; the number of polymorphonuclear cells is variable, particularly early in the illness, but rarely exceeds 50 per cent of the total. The proteins are increased but usually are not higher than 60 to 125 mg. per 100 cc., and may not reach maximum levels until the second or third week of illness. The spinal fluid sugar and chlorides are within normal limits.

Examination of the blood usually reveals a mild leukocytosis with a slight shift to the left, although normal counts, particularly in adults, are not unusual. The sedimentation rate remains normal.

Treatment

There is no specific therapeutic agent against the virus itself. Treatment during the acute stage is symptomatic and supportive, aimed at saving life, relieving symptoms, and preventing deformity. The patient is isolated according to the regulations of the local health authorities. It must be appreciated, however, that the large number of nonparalytic cases and so-called healthy carriers of the poliomyelitis virus during an epidemic period make the isolation of the relatively few manifest cases an ineffective method of controlling the disease. Since the virus is found in the stools of patients for two to three weeks or longer, special precautions such as those used in handling typhoid stools should be followed.

Muscle tenderness and pain are relieved by proper positioning, together with the intermittent application of hot wool compresses and gentle passive motion. In general, sedatives and analgesics are contraindicated because of possible respiratory failure, although aspirin can be used if desired. Curare and neostigmine have been used to relax spasm, but they are not advocated for general use at present. Although hypertonic solutions of glucose have been used in the hope of relieving cerebral edema, there is no evidence that such an effect is produced. Furthermore, one of the basic principles of

treatment during the acute stage is that the patient should be disturbed as little as possible. The indications for the administration of parenteral fluids, therefore, are the same as those in any type of illness—namely, to maintain adequate fluid and salt balance.

The treatment of bulbar poliomyelitis presents special problems which require careful observation to determine the indications for immediate therapy. Most of the deaths are due to failure of the respiratory or cardiac centers. Oxygen is given, usually by nasal catheter, since oxygen tents and masks make it difficult to keep the pharynx clear of mucus. It is extremely important to keep the throat clear of secretions by postural drainage and suction. Tracheotomy should be performed in patients with obstruction of the airway that cannot be relieved by the usual procedures. In the presence of pharyngeal paralysis, penicillin and possibly streptomycin should be used prophylactically. No food or liquids are given by mouth. During the first few days only parenteral fluids are given. When the patient's condition improves, tube feeding is instituted and continued until adequate amounts can be taken by mouth. Moist heat is used to relieve spasm in the muscles of the back, thorax, and abdomen, which may be interfering with respiration. The respirator may be of great aid to patients with certain types of respiratory difficulty, but it should be emphasized that considerable experience and judgment are required for its proper use. The respirator is most helpful in those cases with paralysis of the intercostal muscles and the diaphragm, due to damage of the anterior horn cells of the cord.

Summary

The virus of poliomyelitis is found in the alimentary tract of a large proportion of the population during epidemic periods. In only a small percentage, however, does it invade the central nervous system, producing the classical paralytic infection. The diagnosis, which may be particularly difficult in the abortive and nonparalytic types, is almost entirely dependent on the clinical manifestations and the spinal fluid findings. Treatment during the acute stage is symptomatic, requiring intelligent medical and nursing care to make the patient as comfortable as possible and to prevent deformities and complications.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

DURHAM

VIII

WOUNDS OF THE CHEST

Injuries to the thorax are related, to a singular extent, to assaults of men or groups of men upon one another; therefore it has been chiefly during wars that significant advances have been made in the care of chest injuries. The present methods of treatment of wounds of the chest have evolved from the utilization of new techniques, not only in thoracic surgery but in many other related fields. War, with its ingenious methods of destruction, has supplied the varied and complex wounds needed for the trial and study of these new methods of therapy. The improvement in the care of thoracic injuries has been due to the following factors: (1) advances in the understanding of the physiology of respiration; (2) the recognition and adequate treatment of shock and hemorrhage; (3) the discovery of more efficient methods of anesthesia and resuscitation of pulmonary function; (4) the use of specific antibacterial agents; (5) the development and amplification of certain surgical principles peculiar to the thorax.

It was appreciated as early as the time of Hippocrates that open wounds of the chest are serious and that open and closed wounds of the chest can frequently cause a hemothorax and embarrass respiration. Because the mechanics of respiration were not understood and methods of diagnosis were poor, thoracic surgery was for the most part confined to the evacuation of large collections of fluid from the chest. Hippocrates described a crude method for determining the presence of fluid in the chest, which consisted of violently shaking the patient and listening for the slushing sound in the chest. Up until the eighteenth century the surgical significance of air in the pleural space was not known. Hewson, a pupil of John Hunter, first described a pneumothorax with respiratory embarrassment that was relieved by aspiration of air. Other than simple aspirations of fluid and air from the chest, no significant advances occurred in the care of thoracic wounds until the twentieth century.

The advantage of complete aspiration of a hemothorax was not really recognized and generally accepted until World War II. As late as 1941, articles were published recommending the removal of only enough blood from the thorax to correct respiratory embarrassment, while some groups even advocated substitution of air for the aspirated blood. The fear of continued intrathoracic hemorrhage was the basis for the above ideas. Gradually it became known that most pulmonary hemorrhages would cease spontaneously without a blood or air tamponade. The cooperative efforts of surgeons in World War II, in the Mediterranean theater of operations, under the leadership of Dr. Edward D. Churchill, led to the elucidation of the modern methods of handling a hemothorax. This group emphasized that blood should be completely aspirated from the chest as soon as possible to prevent the formation of large blood clots, to impede the formation of empyema, and to restore pulmonary function. If, in spite of repeated aspirations, the blood did clot, thoracotomy was advocated for the removal of the clots and the fibrin envelope of the lung. Even in the face of a post-traumatic empyema, the procedure was found useful with the help of various antibacterial agents. By applying the principle of obliteration of space as a prophylaxis against infection, yet attaining this end by expansion of the lung and restoration of pulmonary function, these surgeons succeeded in preventing much of the late morbidity associated with chest wounds.

Though an open chest wound was known for centuries to be incompatible with life in most instances, it was due to the efforts of the surgeons in World War I that the urgency of immediate airtight closure of an open chest wound was realized. Even as late as 1900, it was argued that open chest wounds should never be hermetically sealed.

Progress in the care of the more complex pulmonary injuries has paralleled the development of thoracic surgery. With the use of modern anesthesia, blood transfusions, and antibacterial agents, such procedures as the control of hemorrhage, exploration of extensive wounds of the lung, removal of large foreign bodies, repair of diaphragmatic defects, and treatment of combined thoraco-abdominal injuries are approached without hesitation. Though the groundwork had been laid for the approach to these more

complicated problems before World War II, it was certainly the extensive application of the new principles of thoracic surgery by surgeons of that war that advanced our understanding and care of these complex chest wounds.

As the first principle in the care of a chest wound is the restoration of respiratory function, newer methods of pulmonary resuscitation have evolved. When the more complicated injuries of the chest reached the surgeon, it was realized that many patients were literally drowning in their own secretions. With the perfection of bronchoscopy and its extensive use by the thoracic surgeon, the necessity for the aspiration of excessive secretions in the lung was appreciated. The retained secretions were largely due to contusion of the lung and the inability to cough because of pain. The use of nerve-blocks for the control of chest pain in order to allow coughing, and the inhalation of high concentrations of oxygen were used with bronchoscopy to tide the seriously injured chest casualty over the critical first few hours.

Injury to the lung from non-penetrating wounds has been observed since early times. Surgeons in World War I described deaths, without evident wounds, from high explosive shells. In World War II, when more powerful explosives were used against greater concentrations of people, more closed chest injuries were encountered. It was found that a high-explosive shell-blast produced a positive pressure wave of such intensity that the thoracic cage was actually compressed and the underlying lung contused. With extensive demolition of buildings by explosives, more people suffered injuries from blunt objects that likewise caused lung contusion. Thus the syndrome of "traumatic wet lung" came to be described, and appropriate methods for improving oxygen exchange in the edematous lung were applied to these patients.

The present-day treatment of chest injuries has evolved as advances have been made not only in thoracic surgery but in many allied fields. With each greater and more destructive war, the complexity of chest trauma has increased, serving to provide the material whereby all the newer advances in thoracic surgery can be assembled and applied to injuries of the chest.

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AUGUST, 1948

POLIOMYELITIS

North Carolina is experiencing the worst epidemic of poliomyelitis in its history, with more than a thousand cases reported by the end of July. Throughout the course of this epidemic, the State Health Department has wisely given the exact truth about the situation. The National Foundation has come to the aid of the medical and nursing professions of the state in their fight against this modern plague, and again we are indebted to this organization for its timely help.

It is natural to fear a disease that can not only kill but cripple its victims; but it is well not to lose all sense of relative values. We read almost daily with little emotion—unless a friend or relative is concerned—of highway accidents that kill and cripple more people every month than will the whole annual epidemic of polio. The people of neigh-

boring states fear for North Carolinians to cross their borders—forgetting that the automobile is more dangerous than the polio virus.

Since there is so much misinformation about the disease, and since doctors are constantly being asked questions that may be hard to answer, it seems pertinent to reprint here some observations on polio that have been made by Dr. Charles P. Stevick, State Epidemiologist:

(1) The virus is known to be present in the throat and alimentary tract of practically all patients.

(2) Flies have been found to be infected in certain epidemic areas.

(3) Approximately 70 per cent of adults tested have been found to have a considerable immunity to the disease, as shown by studies of their blood serum.

This last fact would possibly indicate a high attack rate of the disease in the early years of life so that the percentage of immunity of the various age groups would be progressively higher in the older groups.

This would explain the fact that there is a low incidence of the disease in the age group under one year. As in the case of diphtheria, an immune mother probably transmits her immunity to her children, who are protected by it for their first six to nine months of life.

Since there is a group amounting to 10 per cent of the adult population which is theoretically susceptible, a corresponding percentage of infants under nine months would not be protected by inherited immunity.

(4) There are no specific early symptoms of the disease; that is, unless muscle symptoms appear, the diagnosis is difficult and often impossible to make.

We suspect that large numbers of cases occur that are so mild that they pass unnoticed, and possibly an even larger number of persons become infected and develop immunity without having any symptoms at all.

It has been said by one authority that paralysis could almost be considered a complication of the disease rather than a standard symptom.

(5) Members of families where there has been a case have been found in certain instances to harbor the virus in their intestinal tracts without having symptoms.

This infection of the family members does not necessarily come from the patient that is present there. Usually, it seems, all members of such a family have become infected at about the same time so that if more than one case occurs in the family, the dates of onset are quite close, perhaps only a few days apart.

(6) The virus has been found in city sewerage systems when cases were located in houses connected to the line. This has not been a constant finding, however.

(7) The virus is fairly resistant. It survives freezing for weeks, and resists the action of solutions of chlorine that will kill typhoid bacilli.

From these facts two conclusions might be drawn, among others:

First, there is probably a rather wide dissemination of the virus in an epidemic area, both in the susceptible members of the population and in certain parts of the environment.

Second, there are probably several modes of spread of the virus from the infected persons, both by direct and indirect contact.

In spite of the present knowledge about the existence of the virus in intestinal excretions, the most common mode of spread is thought by most of the authorities to be by respiratory discharges during conversation, coughing, etc.

It may be that control programs have been inefficient in the past because of the comparatively limited measures taken.

You can well see that such measures must encompass the entire area surrounding the epidemic focus and must require the complete cooperation of the public. This is impossible without bringing all business to a halt and restricting completely the normal routine of living.

The control of certain epidemics by fly abatement has not proven effective.

* * * *

A COSTLY EXPERIMENT

One of the most stimulating and thought-provoking periodicals that come to the editorial desk of the NORTH CAROLINA MEDICAL JOURNAL is the *Harding College Monthly Letter*, in which Dr. George S. Benson, president of Harding College, Searcy, Arkansas, expresses his opinions about many things—chiefly the problems of our government. In the July number he comments on the recent proposal of twenty-one labor unions that the government take over the railroads permanently.

During World War I, Dr. Benson reminds his readers, "the government lost \$2,000,000 a day while running the nation's railroads . . . even though they found it necessary to jump the freight rates 110 per cent!" During World War II, in contrast, when the railroads were kept under private ownership, "There was no increase in freight rates, and the railroads paid \$4,000,000 a day to the federal government in taxes. This means that under private management, our people were ahead at least \$6,000,000 a day . . . over two billion dollars a year!"

What is true of the railroads is true of other industries as well. Government control always makes for extravagance. Just now Uncle Sam has his hands full as he helps to feed Europe and at the same time to finance England's noble experiment in social-

ism. Let us hope that the next administration will wait to see how England makes out with her "nationalization" program before announcing that the United States "is having the same."

* * * *

THE SUPPLEMENT TO THE AUGUST ISSUE

This year, for the first time, the roster of members of the Medical Society of the State of North Carolina is being published separately, as a supplement to the August issue, instead of being incorporated in the magazine. A list of the officers and committees of the Society is included in the supplement, thus making it a real directory of the Society.

Two important considerations influenced the editorial board in its decision to make this change. The first of these was economic. Each year several hundred reprints of the roster have to be made in order to supply the continued demand for copies throughout the year. Since the whole August issue, which formerly contained the roster, sells for 50 cents, the reprints could not be sold for more than this amount. Now that the roster no longer appears in the August issue, it is reasonable to increase the charge for extra copies to \$1.00 in the hope of making money for the Society. This hope should be fully realized next year, if the present plans to sell advertising space in the supplement are carried through.

The other consideration was that of convenience to our subscribers. Many doctors use the roster constantly throughout the year in their correspondence with other members of the State Society. The heavier cover and smaller bulk of the supplement this year should make it more durable and handier to keep on the desk for easy reference.

Another change which becomes effective with this issue was based entirely on reasons of economy. That is the increase in the price of single copies of the JOURNAL from 30 cents to 50 cents. There has been no change in the annual subscription rate of \$3.00, but the editorial board felt that the extra charge for single copies was justified by the additional trouble and expense of mailing such copies upon request.

A VALUABLE SUGGESTION*

We are in receipt of a communication of considerable merit from a valued correspondent which we take the liberty of quoting nearly in full:

I wish to call your attention to a situation which has given me considerable anxiety, namely, your reference to "Organized Medicine." As a doctor interested in my profession, I understand the genesis of that term and what it wishes to convey. However, it is a term that is quite ambiguous and potentially may be harmful for the profession from a sociologic viewpoint. Some of my friends who are professional people and successful businessmen, interested in the social aspects of medicine, have spoken to me about it. They pointed out the fact that engineers refer to the engineering profession, lawyers refer to the legal profession, and teachers to the teaching profession, whenever they discuss their profession as such.

However, doctors speak of "Organized Medicine" when they wish to refer to the medical profession. It conveys at times a meaning far from what it is intended to be. The lay person thinks of the expression "organized" as an organization for the purpose of furthering the interests, generally economic, of the members of a particular organization, as a labor union, etc. They therefore associate the expression "Organized Medicine" as consisting of doctors primarily organized for the purpose of furthering their own personal and economic conditions, and they, therefore, react to that expression with hostility, conscious or unconscious. Wouldn't it be advisable hereafter to change the term "Organized Medicine" to "Medical Profession"?

We think this suggestion so valuable, as a means of improving public understanding, that in the future no use will be made of the term "Organized Medicine" in our editorial columns. We urge that others who agree with us adopt the term "Medical Profession" as standard usage.

We also offer the suggestion that editorial writers and speakers on medical subjects discard other terms which in our opinion do not convey, at least in modern times, an accurate impression. One hears doctors speaking of the public as "the laity." This

is a holdover from a time when medicine was practiced by ecclesiastic practitioners and at that time could properly be used. However, in these days the expression is inaccurate and by implication attributes to the medical profession a status which it no longer occupies, except perhaps in a few instances.

Many more archaic expressions could be found, with some research, without which medical writers and speakers would be no whit hampered in writing or speaking and which they use rather thoughtlessly with little regard to the accuracy of the meaning in modern times. However, we content ourselves with these two, believing that if we can accomplish that much, something will have been done.

* * * *

CANCER — VOLUME I, NUMBER 1

The first number of the official journal of the American Cancer Society, dated May, 1948, is a handsome volume of one hundred seventy-six pages. The journal — entitled simply *Cancer* — is to be published bimonthly by Paul B. Hoeber. The first issue is dedicated, most fittingly, to the memory of James Ewing, "American Pioneer in the Field of Neoplastic Disease."

The editor, Dr. Fred W. Stewart, begins the publication with an "Apologia" which makes an excellent case for the publication of a journal devoted exclusively to cancer: "Cancer has become a part of the activity of every practitioner of medicine . . . there is in America today no journal that accepts for publication papers dealing with all aspects of the cancer field: clinical, experimental and educational."

This number contains a well balanced collection of eight papers and a section entitled "Current Cancer Literature," in which "All original articles appearing in American and foreign . . . journals will be listed and those of more than unusual interest, abstracted." The fact that fifty-two pages are devoted to the articles that have appeared in the four months from September to December, 1947, indicates that the field must have been well covered.

Dr. Stewart has a strong editorial advisory board. The printing of the journal is excellent, and the cuts are clear. There should be a mission for such a publication, and the NORTH CAROLINA MEDICAL JOURNAL offers Dr. Stewart and his editorial cabinet very best wishes for the success of the undertaking.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

August, 1948

No. 8

BCG vaccine, prepared under ideal conditions and administered to tuberculin negative persons by approved techniques, can be considered harmless. On the basis of studies reported in the European and American literature, an appreciable reduction in the incidence of clinical tuberculosis may be anticipated when certain groups of people who are likely to develop tuberculosis because of unusual exposure, inferior resistance, or both, are vaccinated.

BCG VACCINATION IN ALL AGE GROUPS

BCG (Bacillus of Calmette and Guérin) is a bovine tubercle bacillus isolated in 1906. The virulence of the organism was reduced by culturing it on a bile potato medium for 13 years. This avirulent organism when inoculated into animals produced local nodular lesions without progression or generalization of the process. Shortly thereafter the inoculated animals showed a measure of resistance to progressive infection with virulent tubercle bacilli. With the assurance that the organism was harmless and that it offered a degree of protection against virulent tubercle bacilli, human application was begun in 1921 in Paris. Since that time it is estimated that some ten million vaccinations have been performed throughout the world.

The study reported here represents the longest continuous experiment on BCG vaccination in the United States. From experience over a period of 13 years, it can be stated unconditionally that BCG is safe, a fact that has had verification the world over.

The major premise of this study was that BCG should supplement present methods of early diagnosis and segregation. The manner of application of the BCG vaccine was by the multiple puncture method. In thousands of vaccinations by this method complications have been practically nil.

The groups studied were:

1. **Newborn Infants**—The children in this group came from households in which no tuberculosis could be demonstrated by roentgen examination. The infants were vaccinated or accepted as controls before they left the hospital, and no isolation was practiced.

There were 1,417 infants vaccinated during the first week of life. Three months later over 99 per cent of these infants had become tuberculin positive. Six and a half years after the single vaccination almost 80 per cent of those tested were still tuberculin positive. Among the 1,414 infants in the unvaccinated control group, 44 per cent were positive at the end of eight and a half years. This high rate of tuberculin conversion of the controls indicates the degree of exposure for both vaccinated and control groups.

There were 11 cases of tuberculosis with one death in the vaccinated group and 39 cases with seven deaths in the controls. This study has been in progress for 10 years.

2. **Infants Born of Tuberculous Parents**—Isolation was practiced for the controls and vaccinated alike for a period up to 12 weeks. Children were returned to their families only if examinations of concentrated sputum of the tuberculous member were negative.

There were two cases of tuberculosis in the vaccinated group of which one was hospitalized and none died as compared with five cases in the control group all of which were hospitalized and four died.

3. **Student Nurses**—Entering students were tuberculin tested and vaccinated and did not go in wards for a month. The vaccinated student nurses worked in the tuberculosis hospital while the control negative reactors did not. Despite the difference in exposure no cases of pulmonary tuberculosis developed among 142 vaccinated nurses and there were three cases in the 199 controls. There were three additional cases among the tuberculin positive reactors. This study has been in progress for seven years.

4. **Medical Students**—These students were X-rayed and tuberculin tested, and 109 negative reactors who desired it were vaccinated. The control group consisted of those who refused. Among the vaccinated there were no cases of pulmonary tuberculosis but four cases were reported in the nonvaccinated group. This study was begun seven years ago.

5. **Children in a Federal Housing Project**—The entire community was first examined roentgenologically and those with active pulmonary disease were isolated. Alternate children who did not react to tuberculin were vaccinated. In the 625 unvaccinated negative reactors there were four cases of tuberculosis and no deaths. Among the 275 tuberculin positive reactors there were two cases of active tuberculosis with one death. Another death from tuberculosis occurred in a child whose tuberculin reaction was not recorded but whose original X-ray of the chest was negative. There were no cases among the 699 vaccinated children. This study is now in its sixth year.

6. **Inmates of a Mental Institution**—After a roentgen survey and tuberculin testing, the persons with active disease were isolated. Seven months after retesting, alternate negative reactors were vaccinated. There was no pulmonary tuberculosis in the 20 patients vaccinated and one case of bilateral minimal arrested pulmonary tuberculosis in 15 controls.

The efficacy of the vaccine appears well documented in this study. The morbidity and mortality rates from tuberculosis were reduced appreciably after vaccination. The extent, severity, duration and sequelae of the pulmonary lesions when they did occur in the vaccinated were less extensive, of shorter duration and calcified earlier than those in the nonvaccinated.

The portion of our population who would benefit most by the vaccination would seem to be those from susceptible races and those unduly exposed to tuberculosis in all age groups. It is again stressed that those who are vaccinated should have a period of at least one month before and after vaccination when there is no direct contact with virulent tubercle bacilli.

BCG Vaccination in All Age Groups, Sol Roy Rosenthal, M.D., Eleanor I. Leslie, M.D., and Erhard Loewinsohn, M.D., *The Journal of the American Medical Association*, January 10, 1948.

Our advertisers are always interested in proof that their message is seen. Most offer free samples and literature. Just a penny postal from you will serve to indicate that *The North Carolina Medical Journal* is read . . . Make it a habit, for in that way both of us profit: You learn more about new products of proven value, and we can show our advertisers that physicians of the state read their professional house organ.

CORRESPONDENCE

HOME-TOWN CARE OF VETERANS

To the Editor:

I am enclosing a statement from the Committee on Home Care of Veterans of the State Medical Society. I would appreciate it very much if you would publish this in the JOURNAL.

Sincerely yours,
E. McG. Hedgpeth, M.D.

For the past two years Hospital Saving Association has been acting as intermediary between the Veterans Administration on one hand and the doctors and veterans on the other hand in carrying out the Home Service Program of the Veterans Administration. The Executive Committee of the State Society approved the schedule of fees, which was previously approved by a special committee of seven physicians, and each doctor in the state was sent a printed schedule, the main points of the program were outlined, and a simple agreement to handle was optional with each physician.

The number of physicians agreeing to handle this program amounted to approximately 1,500, and the program had a very definite possibility for success. Incidentally, fourteen other states in the United States were handling the same type of program.

Two years have passed. The amount of detail has been terrific. The program was new. The doctors, Hospital Saving Association, and the Veterans Administration itself had much to learn. In several states the local Veterans Administration personnel was not in favor of this program and hampered it in many ways. Hospital Saving Association felt they did not get full cooperation from the Veterans Administration in North Carolina at first, but the situation seems to be better now. Hospital Saving Association has been blamed by many doctors for administrative inefficiency, but we want to assure you that the red tape and miscellaneous administrative procedures have been beyond their control.

This is what they have done for you:

1. They have made prompt payment for services, where forms were completed, and assumed the heavy responsibility of getting actual reimbursement from the government. This takes many months, and for more than

a year they have carried approximately \$50,000.00, paid to doctors, but uncollected from the Veterans Administration.

2. They have tried very hard to protect you and the veteran in your right to treat your own patients and the veteran's right to go to a physician of his choice.

3. They are constantly working with other intermediary plans in other states to establish uniform, simplified procedures for the whole program. In fact, Mr. Crawford, executive vice president of Hospital Saving Association, is a member of the National Committee to perfect procedures, and your chairman of the Veterans' Affairs Committee of the State Medical Society has attended several meetings involving lengthy discussions of the red tape involved, that is typical all over the United States.

The present dilemma

Some doctors, not understanding all facts, have by-passed the Hospital Saving Association and dealt directly with the Veterans Administration. They gain nothing by doing this, as they receive no larger fees and fill out the same forms. The amount of volume thus lost has been large enough to cause financial loss to Hospital Saving Association in handling on their small administrative charge of 8 per cent. In other words, *they need the active support of all doctors in order for them to render the right service*, so that united we can positively see that the veteran gets the free-choice service to which he is entitled.

Your cooperation is essential to make this program work, and the basic steps necessary are as follows:

1. Send in request for treatment *in time*.
 - (a) Emergency, service-connected—You have fifteen days' limit.
 - (b) Non-emergency—Send in request before treatment to be sure you are protected.

Confine your treatments to the "period covered" in authorization. This is typed in lower right-hand corner of authorization.

Hospital Saving Association is powerless to help you unless the service is rendered in accordance with authorization.

Emergency hospital admission or other serious cases or a discrepancy in the written authority can be handled by a collect telephone call to Veterans

Administration in Winston-Salem. Verbal authority will be handled subsequently by written authorization through Hospital Saving Association, and other procedures will be the same.

At present each case requires two signed papers from you:

1. A statement of charges.
2. Simple report of treatment, or in case of an examination, a report of the findings. (The form used for this latter examination is at present a long one, but please understand you are to fill out *only the applicable portion, often one very small section.*)

No government agency can disburse funds without certain minimum formalities. Therefore, you must take some responsibility for minimum red tape.

The National Committee on this hometown service meets again on June 16-17 and their recommendation for further simplification will materially facilitate the program soon.

The Veterans Administration in Washington apparently is very sincere in desiring uniformity and simplicity.

Your Veterans' Affairs Committee earnestly urges you to give this program your wholehearted support. Your reaction will determine the success or failure of this free choice of physicians by the veterans.

Sincerely yours,

Everett I. Bugg, M.D.

J. H. McNeill, M.D.

E. McG. Hedgpeth, M.D.,

Chairman

Committee on Home Care for Veterans.

Procaine Penicillin G Added by Winthrop-Stearns

Winthrop-Stearns, Inc., has added to its line of pharmaceuticals the newly developed Procaine Penicillin G in Oil for intramuscular injections, Dr. Theodore G. Klumpp, president, announced recently.

Notable among many advantages of the new development is that it maintains the therapeutic blood level of penicillin over a period of 96 hours in a great many patients, Dr. Klumpp said. In consequence, in most infections only a single injection of 1 cc. Procaine Penicillin G need be given every other day as against daily or more frequent injections in other forms. For resistant and overwhelming infections and for syphilis, daily injections are recommended.

Each 1 cc. contains 300,000 units of penicillin in free-flowing thixotropic suspension, containing 2 per cent of the new dispersing agent, aluminum monosterate. With this new agent, dosages need not be heated before injection and a fine suspension is formed by slight shaking. It is easy to administer dosages intramuscularly.

PUBLIC RELATIONS

HOW RELATIONS BETWEEN THE MEDICAL PROFESSION AND THE GENERAL PUBLIC CAN BE IMPROVED*

In the country that contributed the most towards medical enlightenment, the people have developed an attitude towards their potential saviors of complete misunderstanding, distrust, or indifference.

The fault lies with both sides. The public does not understand the doctor's methods, explanations, fees. The doctors either do not realize or do not care how medically uneducated most people are.

Even intelligent people are procrastinators about seeking medical advice. The importance of detecting disease in the early stages should be impressed on everyone; the proud poor should be told that no doctor expects to receive payment from every patient.

If doctors explained to their patients in simple terms exactly what was wrong with them and why certain medicines and treatments were prescribed, medicine would not seem so mysterious to the layman.

If, through a general survey, an average could be published showing how much a doctor spends on maintenance, how much time he gives free, how long he works to pay back his medical school debts, the public would understand the fees which are a major source of contention now.

Pamphlets dealing with prevention of disease through proper health measures and the symptoms and treatment for common diseases would decrease serious illnesses and make for better health.

Most of our high schools have required health courses; if an explanation of the medical profession were included in these courses, at least our future citizens would have the proper understanding of medicine.

Medical enlightenment in the form of courses, pamphlets, radio programs and surveys is indicated as the only possible solution to this barrier between the public and the medical profession.

—AMY JEAN WILSON

Cleveland County High School
Shelby, North Carolina

*Winning essay in the high-school essay contest sponsored by the Public Relations Committee. Read before the Second General Session, Medical Society of the State of North Carolina, Pinehurst, May 5, 1946.

BULLETIN BOARD

MINUTES OF EXECUTIVE COMMITTEE

Pinehurst

May 2, 1948

The Executive Committee of the Medical Society of the State of North Carolina met in the Hotel Carolina at Pinehurst on Sunday, May 2, at 8:30 p.m.

The following members were present:

Officers:

Dr. James F. Robertson, Wilmington, President
Dr. V. K. Hart, Charlotte, First Vice President
Dr. J. G. Raby, Tarboro, Second Vice President
Dr. Roscoe D. McMillan, Red Springs, Secretary-Treasurer

Councilors:

Dr. Zack D. Owens, Elizabeth City, First District
Dr. Donald B. Koonce, Wilmington, Third District
Dr. Newsom P. Battle, Rocky Mount, Fourth District
Dr. John N. Robertson, Fayetteville, Fifth District
Dr. Millard D. Hill, Raleigh, Sixth District
Dr. Elias S. Faison, Charlotte, Seventh District
Dr. James H. McNeill, North Wilkesboro, Eighth District
Dr. Irving E. Shafer, Salisbury, Ninth District
Dr. Donald M. McIntosh, Sr., Old Fort, Tenth District

Also present:

Mr. James T. Barnes, Raleigh, Executive Secretary

Present by proxy:

Dr. John C. Tayloe, Washington, Councilor Second District

President Robertson called the meeting to order and stated that a committee consisting of Dr. William Coppridge, Dr. Fred Hubbard, and Dr. Paul Whitaker had been appointed to decide what disposition should be made of the funds contributed for a memorial to Dr. Paul McCain. He stated that Mrs. McCain had indicated that she would rather have a portrait than a bust. The following motion, made by Dr. Owens and seconded by Dr. McNeill, was carried unanimously.

RESOLVED that the portrait of Dr. Paul P. McCain which is being given by members of the Medical Society of the State of North Carolina as a memorial to him be placed in the lobby of the North Carolina Sanatorium for Tuberculosis, McCain, North Carolina; provided, that if the said Sanatorium shall ever cease to be operated as a state institution for the care of tuberculous patients, the portrait shall be placed in the Medical School of the University of North Carolina.

President Robertson then stated that Mr. P. S. Randolph of Chapel Hill, state representative of the National Foundation for Infantile Paralysis, had asked for a schedule of fees for the treatment of patients with poliomyelitis. Dr. McNeill moved that the fees be set to correspond with the fees allowed by the Blue Cross for medical and surgical service. Dr. Hart raised the objection that the Blue Cross has several different plans, each with a different schedule of fees. After some discussion, Dr. Shafer moved that Dr. McNeill's motion be tabled until further information could be obtained. The motion to table was seconded and carried with one dissenting vote.

There followed a discussion of the matter of income tax deductions for postgraduate study and pro-

motional expense. President Robertson and Secretary McMillan stated that deductions for such expenses had been disallowed by the state representative of the Bureau of Internal Revenue. Dr. Hart moved that the Executive Committee go on record as opposing the ruling that promotional expenses cannot be deducted from income tax, and that the matter be turned over to the legal representative of the Society and taken to Washington. The motion was seconded by Dr. John N. Robertson and unanimously carried.

Secretary McMillan stated that a copy of the resolution adopted by the Executive Committee at its meeting on February 8, opposing the practice of fee-splitting, had been sent to the president of the North Carolina Eye, Ear, Nose and Throat Society, but that he had received no reply. He asked what further procedure he should follow. Dr. John N. Robertson stated that the resolution was received by the Eye, Ear, Nose and Throat Society and a copy sent to all of its members, and that a similar resolution was adopted by that society. Dr. Koonce moved that the North Carolina Eye, Ear, Nose, and Throat Society be asked to take under consideration the resolution adopted by the Executive Committee regarding fee-splitting, as transmitted to the said Society in the secretary's letter of March 3, and to give an answer to the Executive Committee. The motion was seconded by Dr. Shafer and carried.

Secretary McMillan then read a letter from the secretary-treasurer of the Mecklenburg County Medical Society, asking honorary membership for Dr. Janet Alexander.

The following motion was offered: RESOLVED that, in accordance with the request of the Mecklenburg County Medical Society, Dr. Janet Alexander be made an honorary member of the Medical Society of the State of North Carolina. Dr. Faison seconded the motion and it was unanimously carried. President Robertson stated that the recommendation had to go before the House of Delegates and that a two-thirds vote in favor of conferring the honorary membership was necessary.

Dr. McNeill stated that Ashe and Watauga Counties had asked to be transferred from the Ninth District to the Eighth District. Dr. Shafer moved that the request be granted. The motion was seconded and unanimously carried.

Dr. McNeill then said that he thought no official action had ever been taken to unite Surry and Yadkin and Wilkes and Alleghany. He moved that if the Surry-Yadkin Society and the Wilkes-Alleghany Society are not already approved as county societies, they be so approved. The motion was seconded by Dr. Shafer and unanimously carried.

Dr. V. K. Hart, chairman of the Committee to Review Hospital, Medical, and Surgical Insurance, stated that the committee had made great headway, but that the matter was not quite ready to present in its final conclusion to the Executive Committee.

Secretary McMillan stated that in the proposed budget for 1948, which was adopted at the last meeting of the House of Delegates, he had forgotten to include an item for Dr. G. W. Murphy's committee which is working to evolve a satisfactory plan for the administration of the Workmen's Compensation Act. This committee's request for \$1,500 to pay for their legal expense was approved by the Executive Committee at its meeting at Sedgfield last September, but was not included in the over-all budget. Dr. Shafer moved that Dr. Murphy be reimbursed for any expense up to \$1,500 that he has incurred in the work of his committee. The motion was seconded and carried. Dr. Koonce moved that the action of the Executive Committee at Sedgfield

be upheld, and that the amount of \$1,500 allowed to Dr. Murphy's committee be added to the present budget. Dr. McNeill seconded the motion, and it was carried.

Dr. Raby offered the following motion: "RESOLVED that the Executive Committee of the Medical Society of the State of North Carolina in-dorse increasing the membership dues of the Society to such an amount as will take care of the Society's expenses; and be it RESOLVED further that the dues be set at \$25.00." Dr. Hart seconded the motion, and it was carried.

There followed some discussion of a letter from Dr. J. LaBruce Ward calling attention to the Basic Science Law which has been passed in a number of states. Dr. Owens moved that it be left up to the Legislative Committee to decide when it is feasible to introduce such a bill in the legislature. Dr. Raby seconded the motion, and it was carried.

There being no further business, the Executive Committee adjourned at 10 p.m.

MINUTES OF EXECUTIVE COMMITTEE

Raleigh

June 20, 1948

The Executive Committee of the Medical Society of the State of North Carolina met in Raleigh at the Hotel Sir Walter, on Sunday, June 20, at 11 a.m. The president of the Society, Dr. James F. Robertson of Wilmington, called the meeting to order and presided.

At the request of President Robertson the roll was called by the secretary, Dr. Roscoe D. McMillan of Red Springs.

The following members were present:

Officers:

President—Dr. James F. Robertson, Wilmington
Secretary-Treasurer—Dr. Roscoe D. McMillan,
Red Springs

Councilors:

First District—Dr. Zack D. Owens, Elizabeth City
Third District—Dr. Donald B. Koonce, Wilmington
Sixth District—Dr. Millard D. Hill, Raleigh
Eighth District—Dr. James H. McNeill, North
Wilkesboro
Ninth District—Dr. Irving E. Shafer, Salisbury
Tenth District—Dr. Donald M. McIntosh, Sr., Old
Fort

Others present:

Mr. James T. Barnes, Executive Secretary,
Raleigh
Miss Mary Robinson, Reporter, Raleigh

The president stated that the primary object of the meeting was to get the Executive Committee together to consider the work of the Society for the year. He then asked the Executive Committee's opinion about inviting representatives of other health agencies and of certain committees and activities of the Society to meet with the Executive Committee at each of its meetings. The following resolution, offered by Dr. McIntosh, was seconded by Dr. Owens and carried unanimously:

RESOLVED that the Executive Committee of the Medical Society of the State of North Carolina extend to the following persons an invitation to attend all of the regular meetings of the said Executive Committee: the secretary of the North Carolina State Board of Health; the immediate past president of the State Medical Society; a representative of the North Carolina Medical Journal; the chairman of the Legislative Committee and the chairman of the Public Relations Committee of the

State Society; the secretary of the Board of Medical Examiners of the State of North Carolina; and a member of the Executive Committee of the North Carolina Hospital Association, who shall be designated by the president of that organization; PROVIDED that persons attending pursuant to such invitation shall have the privilege of participating in discussions and expressing their views but shall not have the privilege of voting.

President Robertson then asked the Executive Committee to consider the policy of requiring each councilor and committee chairman to submit his report to the House of Delegates in writing, so that the reports could be printed and distributed to the delegates prior to the annual meeting. After some discussion Dr. Shafer made the following motion, which was seconded by Dr. McNeill and carried unanimously:

RESOLVED that each councilor be required to send his annual report to the secretary of the State Society one month prior to the annual meeting of the House of Delegates and that the chairman of each committee shall likewise submit his report to the said secretary at that time; that the reports of the committees be printed and a copy sent to each county society for consideration by that Society and its delegates at its April meeting; that the president and secretary of the State Society make and submit to the Executive Committee at its session immediately prior to the annual meeting of the House of Delegates a synopsis of all the said reports, at which time the Executive Committee shall consider and act upon any recommendation of any councilor or committee or, if it sees fit, upon any other matter brought up in said reports; and that a report of the findings and action of the Executive Committee be transmitted to the House of Delegates by the secretary; PROVIDED that this procedure shall be followed, in the case of committee reports, only when the president and the secretary determine that it is appropriate, and that other committee reports shall be made directly to the House of Delegates.

Secretary McMillan called attention to the fact that the Medical Society of the State of North Carolina was organized in 1799 and reorganized in 1849, and that 1949 marked the centennial of the Society. After some discussion of ways in which the centennial could be observed, the matter was left to President Robertson and Secretary McMillan.

A discussion of the Historical Commission and its activity for 1949 terminated in the adoption of the following resolution:

RESOLVED that, since there is no practical advantage to the Medical Society of the State of North Carolina in having compiled a history of medicine in this state, and since the Society is without funds sufficient to carry the project through to completion, the Historical Commission be dropped as a committee of the Society.

Secretary McMillan brought up the matter of the expense involved in the preparation of the Supreme Court brief in the case of State v. Richard C. Baker and its presentation and argument before the court by Messrs. Smith, Leach, and Anderson, the Society's attorneys. Dr. Baker, an osteopath in Rockingham, was convicted in the lower court of practicing medicine without a license. He appealed to the Supreme Court, and the Supreme Court upheld the decision of the lower court. Smith, Leach, and Anderson sent the Society a bill for \$868.00. Dr. McMillan stated that it is the business of the Board of Medical Examiners to enforce the Medical Practice Act in North Carolina, but that the Board does not have the money to meet this bill. Dr. Shafer

moved that the Society pay half of this legal fee and recommend to the State Board of Medical Examiners that they raise their fees to an amount sufficient to take care of all their activities, including prosecutions for violations of the Medical Practice Act. The motion was seconded by Dr. McNeill and carried.

Secretary McMillan suggested that the Society at its annual meeting give some recognition to the men who have practiced medicine for fifty years. Dr. Shafer moved that the Society recognize these men in some way and present them with an emblem or something of the sort. The motion was seconded and carried.

President Robertson stated that he had had a letter from the executive director of the North Carolina Good Health Association suggesting that speakers' bureaus be set up in various localities in order to improve public relations. President Robertson suggested that in order to avoid duplication of effort, it might be wise for the Medical Society to go in with the North Carolina Hospital Association, the North Carolina Nurses Association, the North Carolina Division of the American Cancer Society, the Hospital Saving Association, the Hospital Care Association and other interested groups to establish a speakers' bureau and take other steps to improve public relations. Dr. Shafer moved that Dr. Koonce, as chairman of the Public Relations Committee, be authorized to cooperate with the North Carolina Good Health Association and other similar groups in the state in establishing speakers' bureaus and in other ways co-ordinating the public relations work of all. The motion was seconded and carried.

President Robertson asked that the Executive Committee consider the advisability of setting aside funds to build or purchase a building in Raleigh to house the offices of the State Medical Society. Dr. Shafer moved that a committee be appointed to explore the possibilities and the feasibility of getting a site for a building for the Society. The motion was seconded and carried.

Following a recess for lunch, President Robertson went over the list of committees of the Society and asked for suggestions regarding appointments to these committees. Dr. McNeill moved that the chairman of the Obituary Committee be instructed to receive obituaries on deceased members, not to be read in the General Session, but to be published in the state *Journal*, and that in making his report to the General Session the chairman merely read the names of those members of the Society who have died during the year and then request the audience to stand for a moment in silent prayer. Dr. Hill seconded the motion, and it was carried.

It was decided to change the name of the Insurance Committee to a Liaison Committee on Insurance to work with the North Carolina Insurance Commissioner.

Dr. Koonce moved that the Executive Committee go on record as endorsing the proposal for the addition of a dental school at the University of North Carolina. The motion was seconded by Dr. McNeill and carried.

Mr. Barnes then read a letter from Dr. H. S. Willis, superintendent of the State Tuberculosis Sanatoria, in regard to the great need of additional beds for tuberculous patients. Dr. McNeill moved that the Executive Committee endorse Dr. Willis' request to the legislature for additional beds. The motion was seconded by Dr. Hill and carried.

Upon motion, duly seconded and carried, the meeting was adjourned.

STATE BOARD OF MEDICAL EXAMINERS

Questions Asked in the June, 1948, Examination

ANATOMY, HISTOLOGY AND EMBRYOLOGY

M. A. Pittman, M.D.

- (a) Compare the thymus gland at birth and at puberty.
- (b) The hilus of the lungs is situated where, and contains what?
- In your opinion, what vertebra is this?



View? _____



View? _____

- (a) How is the bladder supported and what are the histologic features of its walls to permit it to accommodate readily large quantities of fluid?
- (b) Describe the tenth cranial nerve—its origin, distribution and functions.
- (a) In what week in the human embryo do limb buds begin to show, and at the same time the heart shows an extraordinary increase in size?
- (b) What is the length of the embryo at four months?
- (a) Describe the ankle joint as to its articulations.
- (b) Give the origin, insertion and function of the gastrocnemius muscle.
- (c) What is sometimes described as the third malleolus?

CHEMISTRY AND PHYSIOLOGY

Paul G. Parker, M.D.

- Define: matter, atom, molecule, compound, and mixture.
- What conditions will each of the following prevent or cure: vitamin A, ascorbic acid, vitamin D, and nicotinic acid.
- Describe the gastric and intestinal digestion of fats.
- Describe how a stain on a garment may be tested for blood.
- What is the relation of calcium to (a) coagulation of blood, (b) the irritability of muscle, and (c) the formation of bone?
- What is hemoglobin? Name its properties and functions.
- What is an antidote? Describe symptoms of barbitol poisoning and give treatment.
- Discuss significance of sedimentation rate.
- What is "the law of the heart," and the "all or none law of the heart"?
- What does systolic blood pressure measure? What does diastolic pressure measure? What is pulse pressure?
- How is venous blood carried to the heart?
- Distinguish between smooth muscle, skeletal muscle, and cardiac muscle physiologically.
- Distinguish between appetite and hunger.
- Discuss part played by vitamin A in the visual process.

15. Name the functions of: the pancreas, adrenals, thyroid, and pituitary gland.

PATHOLOGY AND BACTERIOLOGY

Thomas Leslie Lee, M.D.

Pathology

1. Describe the healing of a wound (a) by first intention (b) by second intention (c) after infection.
2. Describe the typical tissue reaction to the tubercle bacillus. How is it disseminated from the tubercle? How does the tubercle heal?
3. Define a neoplastic tumor (neoplasm). What are the factors that determine its malignancy? How do neoplasms metastasize? Give examples.
4. Describe five types of carcinoma of the breast. How is it diagnosed? How does it metastasize? How should it be treated?
5. Differentiate in gross and microscopically (a) portal sclerosis (b) obstructive biliary sclerosis (c) syphilitic sclerosis.
6. Describe the bone marrow and the blood of acute aplastic anemia.

Bacteriology

1. What is the role of insects in the transmission of disease? Name four insect-borne diseases and their vector.
2. Distinguish between the mechanism of active and passive immunity with examples. Give two examples each of skin tests for immunity and skin tests for allergy. Explain the basic mechanism of each type of test.
3. What pathologic bacteria are commonly transmitted by milk? How does each gain entrance to milk? How may disease transmission by milk be prevented? What bacteriologic test is commonly used as a measure of the sanitary quality and cleanliness of milk?
4. Compare the principles underlying the Dick test, the Schick test, tuberculin test, Brucella test. Discuss the significance of a positive reaction to each.
5. What spinal fluid findings suggest epidemic meningitis? What organisms may cause meningitis?
6. What is Weil's disease? How is it transmitted? How is it diagnosed in the laboratory?
7. Give the life cycle of malarial parasites. How is malaria diagnosed? What is the origin of the terms (a) tertian (b) quartan (c) estivo-autumnal?

SURGERY

R. B. Knight, M.D.

Answer each of the first four questions. No surgical technique, please (3b. excepted).

1. Discuss the advantages of early ambulation of surgical cases.
2. Give the diagnosis and treatment of carcinoma of the head of the pancreas. What is the physiological basis for the palliative operations?
3. (a) Discuss the differential diagnosis in a suspected case of right ureteral calculus in a 45-year-old male.
(b) How would you treat a fracture of the midportion of the left clavicle?
4. Give the symptoms and diagnosis of a ruptured or protruded disk of the fourth or fifth lumbar vertebral space. Briefly, what is the treatment for (1) acute cases and (2) chronic cases?

Answer one of the following three questions.

5. In general, what is the basic principle upon which the several types of operation for glau-

coma are based?

6. Discuss briefly the advantages and disadvantages of the anesthetic agents: (1) cyclopropane, and (2) sodium pentothal.
7. Name at least three complications of mastoiditis.

PHARMACOLOGY, PEDIATRICS AND HYGIENE

C. W. Armstrong, M.D.

Pediatrics

1. How is impetigo contagiosa diagnosed and treated?
2. Briefly outline an immunization program for a child from birth up to the time of entering school.
3. Discuss the treatment of the common cold in a 2-year-old child.

Pharmacology

1. List the advantages and disadvantages of spinal anesthesia.
2. Name five means for the administration of fluids when ordinary oral administration is not feasible.
3. Outline some of the indications for whole-blood transfusions and for plasma administration.

Hygiene

1. How are the following diseases transmitted? (a) trichinosis, (b) ascariasis, (c) trachoma, (d) psittacosis, (e) tularemia, (f) infectious encephalitis.
2. What is undulant fever? How is it contracted and how best prevented?
3. (a) What is the proper procedure where a person is bitten by an animal suspected of being rabid?
(b) Of what importance is the location of the wound and why?

MEDICINE AND THERAPEUTICS

M. D. Bonner, M.D.

1. List the four most frequent causes of pulmonary hemorrhages and discuss the differential diagnosis of each.
2. Give the differential diagnosis of acute coronary thrombosis and pulmonary embolism.
3. Give the differential diagnosis of cardiospasm and carcinoma of the lower end of the esophagus.
4. Give the diagnosis and treatment of exophthalmic goiter.
5. Discuss sympathectomy as a method of treatment of hypertension.
6. Name four virus diseases. Treat one.

OBSTETRICS AND GYNECOLOGY

Ivan Procter, M.D.

1. Discuss briefly your concept of the Rh factor. What is its importance?
2. Name three causes of antepartum bleeding and three causes of postpartum bleeding. State in a few words their management.
3. Given a 35-year-old husband and wife complaining of sterility, what important examinations would you make to arrive at a diagnosis and recommend treatment? Do not discuss, but only list the steps to be taken.
4. What is anovulatory bleeding? Is that menstruation? What produces bleeding at the time of menstruation? Why does it happen?
5. What is meant by Sturmdorf tracheloplasty? When and why is that operation preferable to amputation of the cervix?

6. Given a patient para V, age 40, with a 7-cm. cystic tumor in the left pelvis, what change in her physical findings would cause you to operate as soon as her condition was checked and found operable? Why? What organ or organs would you remove? Why?

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Lloyd J. Thompson, head of the department of neuropsychiatry, presented the mental health project of the Winston-Salem Mental Health Commission at the International Congress on Mental Health in London, England, August 11-21.

The program, based on the belief that the practical starting place for mental health and emotional maturity is in the prenatal period and earliest months of the child's life, will consist of a series of courses to prepare mothers for parenthood.

Dr. Thompson also presented a report at the meeting on "General Semantics as a Scientific Method for Developing Individual and Social Maturity" which was prepared by a group of United States psychiatrists and educators under the chairmanship of Dr. Douglas M. Kelley, associate professor of neuropsychiatry and director of Graylyn.

* * *

A sixteen-page booklet, "Management of a Blood Bank," which describes methods now used at the North Carolina Baptist Hospital and the Bowman Gray School of Medicine, is being distributed to hospitals throughout North Carolina. The booklet was prepared for the North Carolina Maternal Welfare Committee by Dr. Mary I. Griffith, instructor in obstetrics and gynecology. Specific instructions on how to set up a blood bank and nine photographs made by members of the Illustration Department are included.

The booklet was prepared in answer to a growing demand for blood bank services among physicians of the state. Many hospitals which have not had blood banks before are now establishing them, and the book is designed to help them do so.

* * *

Dr. W. E. Cornatzer, assistant professor of biochemistry; Dr. J. Maxwell Little, associate professor of physiology and pharmacology; and Dr. Ernest Yount, instructor in internal medicine, left August 1 for Oak Ridge, Tennessee, to attend a four-week course in the techniques of using radioisotopes in research.

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Dr. J. Street Brewer of Rose Hill addressed the Edgecombe-Nash Counties Medical Society at its regular monthly meeting, held in Rocky Mount on July 14. His subject was "Place of the General Practitioner in a Program of Adequate Medical Care."

The Society has recently established a board of directors consisting of the president and the four immediate past presidents: Dr. C. W. Bailey, Dr. D. L. Knowles, Dr. J. R. Vann, Dr. Allen Whitaker, and Dr. M. L. Stone. This board will formulate policies, direct business and financial affairs, and be the court of appeal on matters not satisfactorily settled by the various committees.

NEWS NOTES

At the recent meeting of the American Medical Association, Dr. Hamilton W. McKay of Charlotte

was elected chairman of the Section on Urology for the coming year.

* * *

Dr. Dan P. Boyette has recently become associated with Dr. W. Eugene Keiter of Kinston in the practice of pediatrics.

* * *

Dr. John R. Kernodle has been named chief of the Department of Obstetrics and associate in gynecology at the Alamance General Hospital in Burlington. He will be associated with Drs. George L. Carrington, R. E. Brooks, and H. B. Kernodle.

EYE, EAR, NOSE AND THROAT SEMINAR

The third annual Seminar to be given by the South Carolina Society of Ophthalmology and Otolaryngology and the North Carolina Eye, Ear, Nose and Throat Society will be held in Charleston, South Carolina, September 13-16.

September 14 and 15 will be devoted to the eye, and September 15 and 16 to ear, nose and throat subjects.

Headquarters for the meeting will be the Francis Marion Hotel.

Further information can be obtained from the secretaries of the Societies, Dr. James A. Harrill, Winston-Salem, N. C., and Dr. Roderick Macdonald, Rock Hill, S. C.

THE SOUTHERN MEDICAL ASSOCIATION MEETING

Miami, Florida, October 25-28

The forty-second annual meeting of the Southern Medical Association will be held at Miami, Florida, on October 25-28, with the Dade County Medical Association as sponsor.

At a meeting of the Executive Committee on July 24, Dinner Key was selected as general headquarters for the following: registration; all section meetings, scientific, technical and hobby exhibits; and motion pictures. Dinner Key (the former Pan American Air Depot) is ten minutes' ride from the general hotel headquarters and makes it possible to hold all of the above activities in one location. There is parking space for over a thousand automobiles around the main building.

The evening programs, which will include the General Public Session, the General Session and the President's Ball, will be held at the Municipal Auditorium. The auditorium is just off of Biscayne Boulevard and is only a short distance from the general hotel headquarters.

Hotel reservations will be handled by the Hotel Committee, Southern Medical Association Meeting, c/o City of Miami Convention Bureau, 320 N. E. Fifth Street, Miami 32, Florida. Since the meeting is being held earlier than usual, all requests for rooms should be made immediately.

Classified Advertisements

PHYSICIAN WANTED

Wanted: Assistant Physician, County Tuberculosis Sanatorium in New England. Training in tuberculosis desirable but not essential. Annual salary \$3060, plus maintenance self and wife, if married. Grade A American Medical School graduate. Send snapshot and full particulars of qualifications.

Address "H"

Post Office Box 456
Winston-Salem, N. C.

VETERANS ADMINISTRATION

Dr. Karl Menninger, internationally-known psychiatrist, has resigned as manager of Veterans Administration hospital at Topeka, Kansas, to become chairman of the dean's committee and senior consultant to the hospital, VA announced recently. The resignation became effective July 25, 1948.

Dr. Menninger was succeeded by Dr. Frank Casey, a native of Goldsboro, North Carolina, who has served under Dr. Menninger as chief of Professional Services at the Topeka hospital since January 1, 1946.

WARNING !

Druggists and the medical profession are urged by the Federal Security Agency's Food and Drug Administration to return all stocks of Siliform Ampuls to the manufacturer, The Heilkraft Medical Company, Boston, Mass. This injection drug, which should be sterile, is potentially dangerous, since samples collected on the market contain living organisms. The Food and Drug Administration found the contaminated samples after a routine inspection at the Heilkraft factory disclosed that the Siliform Ampuls had been manufactured without sterilization.

(BULLETIN BOARD CONTINUED ON PAGE 134)

AUXILIARY

PRACTICAL NURSES

The necessity for providing adequate nursing care for all types of patients is still recognized throughout the country as a most urgent problem.

The Auxiliary did a wonderful job last year in aiding in the recruitment of student nurses. To carry this still further, your Program Committee feels that you will want to know about the new program for training practical nurses.

Many ask: Who may be a practical nurse? What is the present situation in practical nursing? Why have trained practical nurses? What is practical nursing?

Two excellent guides have been prepared to answer the above questions and to assist in setting up schools for the proper training of this type of worker.

The first, "Practical Nursing," an analysis of the practical nurse occupation with suggestions for the organization of training programs, is available through the Vocational Education Division, Office of Education, Federal Security Agency, Washington, D.C. The price is 55¢. This guide is the product of nearly two years of conscientious work by a national committee composed of members representing national nursing organizations, national hospital associations,

public health organizations, and educational organizations. One will find in this analysis only those ideas, duties, and performances on which unanimous agreement was reached by the committee.

Covering the situation in our own state there is another book, "Minimum Requirements and Curriculum for the Training Program in Practical Nursing in the State of North Carolina," issued by the Joint Committee on Standardization for Schools of Practical Nursing. It is now available through the North Carolina Board of Nurse Examiners, Enlarged, 419 Commercial Building, Raleigh, N. C.

Auxiliary members should be informed about this type of training not only so that they will be able to aid in recruiting students, but that they may also explain that girls taking this type of training will not take the place of the registered graduate nurse, who is needed as much as ever, but will relieve her of routine care so that she may be free to care for the more acutely ill, and to give treatments and supervision for which she is trained beyond the duties given the practical nurse.

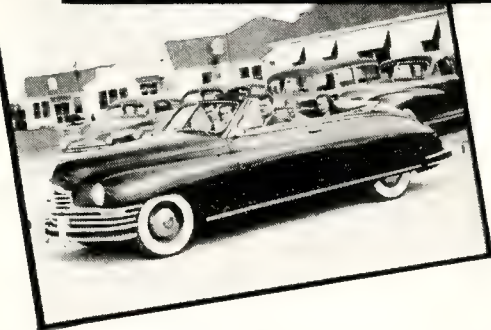
We feel that many girls who are interested in nursing but do not feel they can give the required three or more years to become registered nurses will be interested in this one-year program, at the end of which they will, upon passing an examination by the State Board of Examiners, become licensed practical nurses.

Two schools have already been established in North Carolina: one at Alamance General Hospital, Burlington, for white girls, and one for Negro girls at Duke Hospital. Mrs. Anne Arnold Cain, to whom we are grateful for much of our information, is organizing a class at the Hugh Chatham Memorial Hospital, Elkin to begin in September.

Your Program Committee hopes that you will have a program at your Auxiliary meetings early in the year to stimulate interest in this new type of school, especially since it is possible to establish such schools in smaller hospitals which are unable to meet the requirements for training registered nurses, thus relieving the shortage of nurses to some extent.

MRS. HARRY L. JOHNSON,
Chairman, Program Committee
Elkin

EDGEWOOD...



A Distinctive Southern Sanitarium Fully Equipped for Complete Diagnosis and Treatment of Nervous and Mental Disorders . . . in an Atmosphere of Congenial Friendliness and Quiet Charm.

Edgewood offers all approved therapeutic aids; complete bath departments; supervised individual physical rehabilitation programs. Living accommodations are private and comfortable. Recreational facilities excellent. Full time psychiatrists, adequate nurses and psychiatric aides assure individual care and treatment. More detailed information on request.

Psychiatrist-In-Chief

Orin R. Yost, M.D.

EDGEWOOD

ORANGEBURG

SOUTH CAROLINA

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE STATE OF NORTH CAROLINA

NINETY-FOURTH ANNUAL SESSION

... held at ...

PINEHURST, NORTH CAROLINA

MAY 3, 4, and 5, 1948

President, James F. Robertson, M. D., Wilmington

Secretary-Treasurer, Roscoe D. McMillan, M. D., Red Springs

Executive Secretary, James T. Barnes, Raleigh

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EARLY HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM ORGANIZATION TO 1804

Date	Place	President	Vice Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1948

*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
1849	Raleigh	25	F. J. Hill		W. H. McKee		25		
1 1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williamson, W. G. Thomas	W. H. McKee	W. G. Hill	38	9	
2 1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	0	
3 1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman	E. B. Haywood	J. J. W. Tucker	72	12	
4 1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman	W. W. Harris	Daniel Dupree	80	14	
5 1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean	S. S. Satchwell	Daniel Dupree	84	17	
6 1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly	S. S. Satchwell	J. B. Dunn	96	18	
7 1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson	S. S. Satchwell	J. B. Dunn	101	22	
8 1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson	W. G. Thomas	J. B. Dunn	113	16	
9 1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce	W. G. Thomas	J. B. Dunn	172	18	
10 1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard	W. G. Thomas	C. W. Graham			
11 1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach	W. G. Thomas	C. W. Graham	233	18	
12 1861	Morgantou	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom	W. G. Thomas	C. W. Graham	244	18	
13 1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones	W. G. Thomas	C. W. Graham			
14 1867	Tarboro	41	W. G. Thomas		S. S. Satchwell	C. W. Graham	288	11	
15 1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker	Thomas F. Wood	J. W. Jones			
16 1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke	Thomas F. Wood	J. W. Jones			
17 1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne	Thomas F. Wood	J. W. Jones			
18 1871	Raleigh	35	Hugh Kelley	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby	Thomas F. Wood	J. W. Jones			
19 1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom	James McKee	J. W. Jones			
20 1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, P. T. Jernan	James McKee	H. T. Bahnson			
21 1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight	James McKee	H. T. Bahnson			
22 1875	Wilson	60	J. W. Jones	Walker Debnam, J. A. Gibson, William Little, D. N. Patterson	James McKee	H. T. Bahnson	148	5	
23 1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall	James McKee	H. T. Bahnson	157	4	
24 1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill	James McKee	A. G. Carr	177	4	
25 1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith	L. J. Picot	A. G. Carr	194	6	
26 1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill	L. J. Picot	A. G. Carr	198	6	
27 1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis	L. J. Picot	A. G. Carr	225	6	
28 1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy	L. J. Picot	A. G. Carr	254	6	
29 1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald	L. J. Picot	A. G. Carr	297	7	
30 1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead	L. J. Picot	A. G. Carr	310	7	
31 1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long	L. J. Picot	A. G. Carr	348	7	
32 1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr	W. C. Murphy	R. L. Payne, Jr.	424	6	

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1948—Continued

*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice Presidents	Secretary	Treasurer	Members on Roll	Honorary Members	Honorary Fellows*
3 1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	R. L. Payne, Jr.	438	7	
4 1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson	J. M. Baker	R. L. Payne, Jr.	452	7	
5 1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson	J. M. Baker	C. M. Van Poole	306	6	
6 1889	Elizabeth City	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long	J. M. Baker	C. M. Van Poole	410	6	
7 1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth	J. M. Hays	C. M. Van Poole	414	6	
8 1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly	J. M. Hays	C. M. Van Poole	422	6	
9 1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard	J. M. Hays	C. M. Van Poole	431	6	
10 1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill	R. D. Jewett	M. P. Perry	447	5	3
11 1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher	R. D. Jewett	M. P. Perry	454	5	3
12 1895	Goldsboro		J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer	R. D. Jewett	M. P. Perry	436	7	3
13 1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley	R. D. Jewett	M. P. Perry	452	7	3
14 1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long	R. D. Jewett	M. P. Perry	406	6	3
15 1898	Charlotte	*	Francis Duffy	E. C. Register, A. T. Cotton, J. H. B. Knight, F. H. Russell	R. D. Jewett	M. P. Perry	437	6	21
16 1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson	Geo. W. Presley	G. T. Sikes	489	6	16
17 1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard	Geo. W. Presley	G. T. Sikes	482	6	21
18 1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell	Geo. W. Presley	G. T. Sikes	515	5	18
19 1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott	Geo. W. Presley	G. T. Sikes	546	5	20
20 1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson	J. Howell Way	G. T. Sikes	530	6	19
21 1904	Raleigh	320	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl	J. Howell Way	G. T. Sikes	1,033	8	17
22 1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison	J. Howell Way	G. T. Sikes	1,175	8	17
23 1906	Charlotte	406	E. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer	J. Howell Way	G. T. Sikes	1,234	8	16
24 1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLaughlin, W. F. Hargrove	David A. Stanton	H. McK. Tucker	858	7	16
25 1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon	David A. Stanton	H. McK. Tucker	998	7	28
26 1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees	David A. Stanton	H. McK. Tucker	1,067	7	25
27 1910	Wrightsville Beach	276	J. A. Burroughs†	E. J. Wood, John Q. Myers, L. D. Wharton	David A. Stanton	H. D. Walker	1,080	8	35
28 1911	Charlotte	412	E. J. Wood	J. V. McGougan, W. E. Warren, L. N. Glenn	David A. Stanton	H. D. Walker	850	8	45
29 1912	Hendersonville	296	A. A. Kent	J. P. Monroe, W. P. Horton, J. G. Murphy	David A. Stanton	H. D. Walker	950	8	44
30 1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse	John A. Ferrell	H. D. Walker	1,133	8	40
31 1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier	John A. Ferrell	H. D. Walker	1,228	8	47
32 1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell	John A. Ferrell	H. D. Walker	1,221	9	68
33 1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Hardison	Benj. K. Hays	W. M. Jones	1,228	10	79
34 1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford	Benj. K. Hays	W. M. Jones	1,271	11	81
35 1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal	Benj. K. Hays	W. M. Jones	1,087	11	81
36 1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair	Sec.-Treas. Benj. K. Hays	Acting Sec.-Treas. L. B. McBrayer	1,306	11	100
37 1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox	Benj. K. Hays	L. B. McBrayer	1,497	12	100
38 1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning	Benj. K. Hays	L. B. McBrayer	1,491	12	93
39 1922	Winston-Salem	507	H. A. Royster	W. T. Parrott, B. C. Nalle, J. R. McCracken		Sec.-Treas. L. B. McBrayer	1,571	12	100
40 1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long		L. B. McBrayer	1,562	9	101
41 1924	Raleigh	525	J. V. McGougan	J. L. Spruill,† Eugene B. Glenn, D. A. Garrison		L. B. McBrayer	1,604	9	106
42 1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt		L. B. McBrayer	1,657	10	116
43 1926	Wrightsville Beach	445	Wm. deB. MacNider	J. P. Matheson, W. W. Dawson, H. H. Bass		L. B. McBrayer	1,663	10	107
44 1927	Durham	653	John Q. Myers	J. W. Carroll, A. Y. Linville, C. H. Cocke		L. B. McBrayer	1,691	10	121
45 1928	Pinehurst	611	John T. Burrus	G. H. Macon, R. F. Leinbach, W. R. Griffin		L. B. McBrayer	1,738	11	143
46 1929	Greensboro	671	Thurman D. Kitchin	W. L. Dunn,† Asheville, D. T. Tayloe, Jr., Washington, W. D. James, Hamlet		L. B. McBrayer	1,666	11	146
47 1930	Pinehurst	701	L. A. Crowell	W. B. Murphy, Wm. E. Warren, N. B. Adams		L. B. McBrayer	1,711	11	155

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1948—Continued

Date	Place of Meeting	Number in Attendance	President	President-Elect	Vice Presidents	Sec.-Treas.	Members on Roll	Honorary Members	Honorary Fellows
78 1931	Durham.....	714	J. G. Murphy.....	M. L. Stevens.....	C. A. Julian, Greensboro J. W. Davis, Statesville.....	L. B. McBrayer.....	1,600	10	184
79 1932	Winston-Salem.....	740	M. L. Stevens.....	Jno. B. Wright.....	C. W. Banner, Greensboro W. W. Sawyer, Elizabeth City.....	L. B. McBrayer.....	1,559	10	166
80 1933	Raleigh.....	714	Jno. B. Wright.....	I. H. Manning.....	J. R. McCracken, Waynesville.....	L. B. McBrayer.....	1,363	10	181
81 1934	Pinehurst.....	728	I. H. Manning.....	P. P. McCain.....	W. G. Suiter, Weldon R. L. Felts, Durham.....	L. B. McBrayer.....	1,563	10	210
82 1935	Pinehurst.....	706	P. P. McCain.....	Paul H. Ringer.....	H. D. Walker, Elizabeth City J. F. McKay, Buie's Creek William Allan, Charlotte.....	L. B. McBrayer.....	1,619	10	215
83 1936	Asheville.....	583	Paul H. Ringer.....	C. F. Strosnider.....	J. K. Pepper, Winston-Salem E. S. Bulluck, Wilmington.....	L. B. McBrayer.....	1,462	10	235
84 1937	Winston-Salem.....	767	C. F. Strosnider.....	Wingate M. Johnson.....	C. A. Woodward, Wilson Jno. F. Brownberger, Fletcher.....	L. B. McBrayer.....	1,503	7	253
85 1938	Pinehurst.....	802	Wingate M. Johnson.....	J. Buren Sidbury.....	R. B. McKnight, Charlotte J. F. Abel, Waynesville.....	T. W. M. Long.....	1,715	7	284
86 1939	Cruise to Bermuda.....	319	J. Buren Sidbury.....	William Allan.....	C. B. Williams, Elizabeth City M. D. Hill, Raleigh.....	T. W. M. Long.....	1,605	8	313
87 1940	Pinehurst.....	835	William Allan.....	Hubert B. Haywood.....	F. Webb Griffith, Asheville Frank C. Smith, Charlotte.....	T. W. M. Long.....	1,661	7	311
88 1941	Pinehurst.....	765	Hubert B. Haywood.....	F. Webb Griffith.....	D. W. Holt, Greensboro T. C. Kerns, Durham.....	T. W. M. Long (1) I. H. Manning.....	1,700	7	309
89 1942	Charlotte.....	710	F. Webb Griffith.....	Donnell B. Cobb.....	Thos. Del. Sparrow, Charlotte T. L. Carter, Gatesville.....	Roscoe D. McMillan.....	1,837	8	350
90 1943	Raleigh.....	736	Donnell B. Cobb.....	James W. Vernon.....	George S. Coleman, Raleigh Julian Moore, Asheville.....	Roscoe D. McMillan.....	1,919	8	361
91 1944	Pinehurst.....	760	James W. Vernon.....	Paul F. Whitaker.....	Fred C. Hubbard, North Wilkesboro George L. Carrington, Burlington.....	Roscoe D. McMillan.....	1,982	8	363
1945	No meeting because of O.D.T. restrictions		Paul F. Whitaker.....	Oren Moore.....	Wm. H. Smith, Goldsboro Zack D. Owens, Elizabeth City.....	Roscoe D. McMillan.....	1,811	7	383
92 1946	Pinehurst.....	889	Oren Moore.....		Wm. H. Smith, Goldsboro Zack D. Owens, Elizabeth City.....	Roscoe D. McMillan.....	1,939	6	397
93 1947	Virginia Beach, Va.....	444	Wm. M. Coppridge.....	Frank A. Sharpe.....	G. E. Bell, Wilson J. B. Bullitt, Chapel Hill.....	Roscoe D. McMillan.....	2,191	7	407
94 1948	Pinehurst.....	920	Frank A. Sharpe (2)	James F. Robertson.....	V. K. Hart, Charlotte J. G. Raby, Tarboro.....	Roscoe D. McMillan.....	2,298	8	404

†Died during his term of office; succeeded by E. J. Wood, first vice president

†Died during term of office.

(1) Died during term of office; succeeded by I. H. Manning.

(2) Died during term of office; succeeded by James F. Robertson, president-elect.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1930-1948

COUNTY	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
Alamance-Caswell	33	33	32	29	32	30	31	30	27	34	35	35	42	41	43	38	43	36	39
Alexander 1																			
Alleghany 2																			
Anson.....	6	6	4	4	9	7	8	7	6	11	10	10	9	10	9	9	9	10	10
Ashe 3	5	5	4			7													15
Ashe-Watauga																		17	
Avery 4	5	5	5		5	5	5	5	6	4	5	5	6	7	9	8	6	7	7
Beaufort.....	18	15	15	12	13	15	10	9	11	12	13	13	14	13	13	12	13	16	19
Bertie.....	7	9	7	8	9	11	9	8	8	7	7	7	8	7	8	6	6	8	7
Bladen.....	8	8	8	5	6	6	6		7	7	7	7	7	7	7	7	7	7	6
Brunswick.....	2	2	2	2	2	3	2												
Buncombe.....	113	112	105	83	107	115	106	98	103	111	108	90	97	115	128	121	124	145	162
Burke.....	17	17	17	17	12	10	13	18	17	18	22	22	21	23	25	8	24	32	36
Cabarrus.....	23	20	20	10	14	21	8	11	11	12	15	16	27	28	34	26	29	40	41
Caldwell.....	15	14	12	9	12	12	12	13	15	18	17	17	17	20	18	19	16	21	21
Camden 5																			
Carteret.....	12	12	12	12	12	11	12	10	2	3	2	4	6	6	8	4	9	11	13
Caswell 6						11													
Catawba.....	13	13	16	8	16	16	16	14	19	19	15	13	21	19	24	11	23	25	32
Chatham.....	9	4	3	2	3	2	0	1	3	6	4	6	7	7	7	3	3	7	8
Cherokee.....	10	9	8	5	8	8	8	7	12	11	11	10	14	12	12	12	13	12	12
Chowan-Perquimans.....	8	6	7	6	7	5	4	2	5	5	3	5	7	7	5	5	9	11	11
Clay 7																			
Cleveland.....	23	19	22	21	20	21	22	21	25	23	27	28	30	30	28	27	28	32	33
Columbus.....	15	10	8	8	10	11	10	7	9	16	18	15	17	18	18	32	15	22	20
Craven.....	13	13	14	9	5	10	6	6	8	7	7	11	12	14	10	11	14	14	16
Cumberland.....	26	23	21	27	27	27	21	24	24	22	22	13	27	25	27	13	25	29	27
Currituck 8	1	1	1																
Dare 5																			
Davidson.....	16	17	17	17	20	23	19	24	18	17	29	31	29	29	30	29	29	31	33
Davie 9	5	5	6	4	2	1	1	1	4										
Duplin.....	9	11	7	2	2	9	2	2	4	2	4	10	12	7	11	6	9	13	11
Durham-Orange.....	67	76	77	76	78	85	87	81	104	110	119	127	128	135	139	138	133	152	154
Edgecombe-Nash.....	10	43	39	25	46	40	32	35	31	39	48	40	37	48	54	52	45	57	55
Forsyth.....	70	66	69	70	73	77	77	73	83	82	93	92	115	122	123	129	126	129	135
Franklin.....	10	9	7	7	9	8	9	9	6	3		3	4	5	4	2	4	4	5
Gaston.....	36	33	37	12	28	30	21	28	38	35	35	41	48	44	43	18	28	42	48
Gates.....	2	2	2		2	2	2	2	1	2	1	1	3	3	3	3	3	3	2
Graham.....																			
Granville.....	13	13	12	10	10	11	10	11	13	13	14	14	14	14	14	12	14	13	13
Greene.....	5	5	5	5	6	5	6	6	7	6	5	6	7	6	6	6	6	4	6
Guilford.....	124	124	118	91	102	99	83	109	101	108	110	115	127	133	135	134	129	151	158
Halifax.....	16	15	14	13	15	18	17	25	23	23	24	21	26	26	25	25	22	23	23
Harnett.....	14	13	15	16	14	15	10	16	12	12	16	18	18	19	19	19	17	16	19
Haywood.....	14	12	13	15	20	19	21	22	21	21	21	19	21	20	20	19	16	21	21
Henderson.....	19	14	12	9	17	17	13	14	17	13	10	7	17	17	17	17	20	21	23
Hertford.....	5	5	5	6	7	7	7	4	5	7	3	1	6	8	8	2	6	6	6
Hoke.....	14	14	12	11	13	14	13	11	10	7	10	10	11	9	10	10	11	10	9
Hyde.....	1	1	1		1	1													
Iredell-Alexander.....	38	38	39	29	38	38	39	30	31	25	27	24	23	26	26	10	19	28	32
Jackson 10	6	3	7	2	4	7	4	6	3	3	1	1	2	3	4	3	6		

STATUS OF MEMBERSHIP BY COUNTIES—Continued

COUNTY	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
Jackson-Swain																		8	9
Johnston	23	25	26	19	19	21	12	9	27	25	24	18	18	22	23	19	22	26	26
Jones	3	3	3	3	3	3	3	2	1										
Lee	13	11	13	10	10	10	3	8	10	9	10	11	12	11	12	12	13	13	16
Lenoir	22	17	19	20	22	20	22	21	22	21	25	24	26	27	27	12	25	29	32
Lincoln	13	10	12	12	13	11	8	10	11	11	11	14	15	15	14	10	15	14	14
Macon-Clay	8	4	3	2	5	3	5	4	2	4	1	4	4	4	4	3	7	7	5
Madison	5	3	4	5	4	4	1		1				1	1	1	3	3	5	7
Martin	8	7	4																
Martin-Washington-Tyrrell				10	10	12	10	12	13	13	11	15	12	14	18	16	17	18	17
McDowell	12	10	10	11	10	13	10	6	10	12	13	14	13	12	13	13	15	14	14
Mecklenburg	128	124	117	104	108	116	116	125	119	119	130	138	127	131	142	150	161	175	184
Mitchell				8	3	2	3	3	2	3	3								
Mitchell-Avery																			
Mitchell-Watauga	6	5	5																
Mitchell-Yancey																			
Montgomery	9	10	9	7	9	9	8	7	3	6	4	5	6	5	4	2	4	7	10
Moore	17	21	21	18	22	21	19	22	21	20	19	17	22	21	21	20	22	23	26
Nash	33																		
New Hanover	38	37	35	25	35	39	34	36	32	39	37	38	43	44	45	40	49	55	62
Northampton	3	4	5	4	8	4	4	4	9	1	3	7	8	8	8	3	2	3	4
Onslow	5	5	6	6	6	5	2	5	4	4	3	5	8	8	8	8	8	10	10
Orange																			
Pamlico	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	4	5	4	4
Pasquotank-Camden-Currituck-Dare	17	14	11	12	14	12	11	9	4	9	11	10	14	13	12	14	16	17	21
Pasquotank-Camden-Dare																			
Pender	1	1	1	1	1	1		1	1				1	1	2	2	1	1	
Perquimans																			
Person	6	6	6	7	7	8	7	7	8	8	9	8	8	9	8	6	6	6	6
Pitt	27	27	20	14	22	26	24	26	30	29	28	25	29	30	31	32	30	31	32
Polk	6	5	7	7	6	6	4	5	5	5	6	6	6	6	7	7	6	7	5
Randolph	8	7	14	10	11	13	10	9	11	11	13	12	12	13	14	5	16	20	16
Richmond	17	17	15	16	15	16	15	17	16	15	16	16	15	17	17	16	18	19	20
Robeson	24	21	22	23	25	27	28	29	34	33	35	35	35	36	38	38	38	40	47
Rockingham	24	24	21	22	23	21	18	20	18	22	22	26	24	29	29	25	29	29	30
Rowan-Davie	35	39	33	24	34	30	27	28	26	24	27	34	33	33	42	42	41	41	49
Rutherford	22	21	21	19	20	21	23	22	23	23	24	22	22	22	23	22	20	24	25
Sampson	13	13	14	14	14	14	14	16	16	16	18	18	16	15	16	10	16	15	16
Scotland	10	11	11	11	11	11	10	11	11	10	10	10	10	9	10	10	9	12	10
Stanly	16	15	13	12	16	17	18	19	18	20	16	17	20	20	17	16	18	21	26
Stanly-Montgomery																			
Stokes	2	6	6	1	1	1													
Surry	20	13	17	12															
Surry-Yadkin					25	22	17	15	14	12	18	16	19	23	27			29	31
Swain					3		4	5	3	3		2	3	3	2		2		
Transylvania	2	2	1	3	2	2	2		2	3	1	7	8	10	9	7	7	6	6
Tyrrell																			
Union	13	10	9	10	10	11	10	8	11	13	13	14	15	14	14	3	13	14	14
Vance	12	8	7	8	9	9	8	8	6	10	10	10	12	10	10	8	11	11	12
Wake	94	87	86	87	89	88	89	95	100	95	94	93	87	98	96	96	92	110	108
Warren	6	6	6	5	5	6	2	2	2	2	3	2	3	4	5	2	6	6	5
Washington-Tyrrell	3	3	3																
Watauga																			
Watauga-Ashe				3	5	6	5	5	6	6	4	5	7	8	5	2	7		
Wayne	38	30	32	22	27	29	27	29	30	31	34	33	35	38	38	37	37	38	38
Wilkes	10	11	10																
Wilkes-Alleghany				9	13	10	14	13	14	15	13	16	17	17	17	14	16	17	17
Wilson	28	28	22	21	25	29	31	25	25	24	25	27	27	31	29	27	30	33	33
Yadkin	10		4	1															
Yancey	4	1	1		5	4	1		4										
Totals	1,694	1,600	1,559	1,363	1,563	1,619	1,462	1,503	1,715	1,605	1,661	1,694	1,837	1,919	1,982	1,811	1,939	2,191	2,298

(1) See Iredell Alexander. (2) See Wilkes-Alleghany. (3) See Watauga-Ashe and Ashe-Watauga. (4) See Mitchell-Avery. (5) See Pasquotank-Camden-Dare and Pasquotank-Camden-Currituck-Dare. (6) See Alamance-Caswell. (7) See Macon-Clay. (8) See Pasquotank-Camden-Currituck-Dare. (9) See Rowan-Davie. (10) See Jackson-Swain. (11) See Martin-Washington-Tyrrell. (12) See Mitchell-Avery, Mitchell-Watauga, and Mitchell-Yancey. (13) See Avery and Mitchell. (14) See Mitchell, Watauga-Ashe, and Ashe-Watauga. (15) See Stanly-Montgomery. (16) See Edgecombe-Nash. (17) See Durham-Orange. (18) See Chowan-Perquimans. (19) See Surry-Yadkin. (20) See Washington-Tyrrell and Martin-Washington-Tyrrell. (21) See Mitchell-Watauga, Watauga-Ashe, and Ashe-Watauga. (22) See Ashe-Watauga.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1948

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledoux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883

Name	Address	Appointed by	Term
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1884 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1886
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1888
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker, M.D.	Garboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1892 to 1897
Thomas F. Wood, M.D., Secretary†	Wilmington	State Society	1891 to 1895
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1893 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1894 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1897 to 1899
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1901 to 1907
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1907 to 1913
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1909
David T. Tayloe, M.D.	Washington	State Society	1907 to 1913
James A. Burroughs, M.D. ¹	Asheville	State Society	1909 to 1913

† Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

¹ Died leaving unexpired term.

Name	Address	Appointed by	Term
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1913 to 1919
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1915
A. A. Kent, M.D. ²	Lenoir	State Society	1913 to 1919
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1915 to 1921
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1917 to 1923
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D. ¹	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1919 to 1923
Fletcher R. Harris, M.D. ³	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1921 to 1923
Chas. E. Waddell, C.E. ⁴	Asheville	Gov. C. Morrison	1919 to 1925
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1923 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1923 to 1929
J. Howell Way, M.D., President	Waynesville	Gov. C. Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. C. Morrison	1923 to 1927
James P. Stowe, Ph.G.	Charlotte	Gov. C. Morrison	1923 to 1925
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1929
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1926
Charles O'H. Laughinghouse, M.D. ⁵	Greenville	State Society	1925 to 1931
Cyrus Thompson, M.D. ¹	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M.D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D. ¹	Raleigh	Gov. A. W. McLean	1926 to 1931
Jno. B. Wright, M.D. ⁶	Raleigh	Gov. A. W. McLean	1925 to 1931
E. J. Tucker, D.D.S. ⁶	Roxboro	Gov. A. W. McLean	1926 to 1927
W. S. Rankin, M.D. ⁴	Charlotte	State Board of Health	1927 to 1929
L. E. McDaniel, M.D.	Jackson	State Board of Health	1927 to 1929
Chas C. Orr, M.D.	Asheville	Gov. A. W. McLean	1929 to 1935
Thomas E. Anderson, M.D. ⁶	Statesville	State Society	1929 to 1935
L. E. McDaniel, M.D. ⁶	Jackson	State Society	1927 to 1933
James P. Stowe, Ph.G. ⁶	Charlotte	Gov. A. W. McLean	1929 to 1935
A. J. Crowell, M.D. ⁶	Charlotte	Gov. O. Max Gardner	1930 to 1931
J. M. Parrott, M.D. ⁶	Kinston	State Board of Health	1929 to 1935
Chas. C. Orr, M.D. ⁶	Asheville	Gov. O. Max Gardner	1931 to 1935
J. M. Parrott, M.D. ⁵	Kinston	State Society	1931 to 1935
C. V. Reynolds, M.D.	Asheville	State Society	1931 to 1933
L. B. Evans, M.D.	Windsor	State Society	1931 to 1933
S. D. Craig, M.D.	Winston-Salem	State Society	1931 to 1933
John T. Burrus, M.D.	High Point	Gov. O. Max Gardner	1931 to 1933
J. N. Johnson, D.D.S.	Goldsboro	Gov. O. Max Gardner	1931 to 1933
J. A. Goode, Ph.G.	Asheville	Gov. O. Max Gardner	1931 to 1933
H. L. Large, M.D.	Rocky Mount	Gov. O. Max Gardner	1931 to 1935
H. G. Baity, C.E.	Chapel Hill	Gov. O. Max Gardner	1931 to 1935
Grady G. Dixon, M.D. ⁷	Ayden	Ex. Com. State Society	1931 to 1932
Grady G. Dixon, M.D. ⁷	Ayden	State Society	1932 to 1935
S. D. Craig, M.D.	Winston-Salem	State Society	1933 to 1937
W. T. Rainey, M.D.	Fayetteville	State Society	1933 to 1937
J. N. Johnson, D.D.S.	Goldsboro	Gov. J. C. B. Ehringhaus	1933 to 1937
Hubert B. Haywood, M.D.	Raleigh	Gov. J. C. B. Ehringhaus	1933 to 1937
James P. Stowe, Ph.G.	Charlotte	Gov. J. C. B. Ehringhaus	1933 to 1937
Grady G. Dixon, M.D.	Ayden	State Society	1935 to 1939
J. LaBruce Ward, M.D.	Asheville	State Society	1935 to 1939
H. Lee Large, M.D.	Rocky Mount	Gov. J. C. B. Ehringhaus	1935 to 1939
H. G. Baity, C.E.	Chapel Hill	Gov. J. C. B. Ehringhaus	1935 to 1939
J. N. Johnson, D.D.S.	Goldsboro	Gov. Clyde R. Hoey	1937 to 1941
Hubert B. Haywood, M.D.	Raleigh	Gov. Clyde R. Hoey	1937 to 1941
James P. Stowe, Ph.G.	Charlotte	Gov. Clyde R. Hoey	1937 to 1941
S. D. Craig, M.D.	Winston-Salem	State Society	1937 to 1941
W. T. Rainey, M.D.	Fayetteville	State Society	1937 to 1941
Grady G. Dixon, M.D.	Ayden	State Society	1939 to 1943
J. LaBruce Ward, M.D.	Asheville	State Society	1939 to 1943
H. Lee Large, M.D.	Rocky Mount	Gov. Clyde R. Hoey	1939 to 1943
H. G. Baity, Sc.D.	Chapel Hill	Gov. Clyde R. Hoey	1939 to 1943

² Resigned to become member of General Assembly.

³ Resigned to become Health Officer Vance County.

⁴ Resigned.

⁵ Resigned to become Secretary of State Board of Health.

⁶ Term terminated on account of the reorganization of the State Board of Health by General Assembly.

⁷ To fill vacancy caused by resignation of Dr. J. M. Parrott.

Name	Address	Appointed by	Term
C. C. Fordham, Jr., Ph.G. ⁸	Greensboro	Gov. Clyde R. Hoey	1940 to 1943
S. D. Craig, M.D.	Winston-Salem	State Society	1941 to 1945
W. T. Rainey, M.D.	Fayetteville	State Society	1941 to 1945
Hubert B. Haywood, M.D.	Raleigh	Gov. J. Melville Broughton	1941 to 1945
J. N. Johnson, D.D.S.	Goldsboro	Gov. J. Melville Broughton	1941 to 1945
James O. Nolan, M.D.	Kannapolis	Gov. J. Melville Broughton	1941 to 1945
Grady G. Dixon, M.D.	Ayden	State Society	1943 to 1947
J. LaBruce Ward, M.D.	Asheville	State Society	1943 to 1947
H. Lee Large, M.D.	Rocky Mount	Gov. J. Melville Broughton	1943 to 1947
Larry I. Moore, Jr.	Wilson	Gov. J. Melville Broughton	1943 to 1947
S. D. Craig, M.D., Pres.	Winston-Salem	State Society	1945 to 1949
W. T. Rainey, M.D.	Fayetteville	State Society	1945 to 1949
Hubert B. Haywood, M.D.	Raleigh	Gov. R. Gregg Cherry	1945 to 1949
James O. Nolan, M.D.	Kannapolis	Gov. R. Gregg Cherry	1945 to 1949
Paul Jones, D.D.S. ⁹	Farmville	Gov. R. Gregg Cherry	1946 to 1949
Jasper C. Jackson, Ph.G. ¹⁰	Lumberton	Gov. R. Gregg Cherry	1945 to 1947
Grady G. Dixon, M.D.	Ayden	State Society	1947 to 1951
J. LaBruce Ward, M.D.	Asheville	State Society	1947 to 1951

⁸ To fill vacancy caused by the death of James P. Stowe, Ph.G.

⁹ To fill vacancy caused by resignation of J. N. Johnson, D.D.S.

¹⁰ To fill vacancy caused by resignation of Larry I. Moore, Jr.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

James H. Dickson, Wilmington	1859-1866
Charles E. Johnson, Raleigh	1859-1866
Caieb Winslow, Hertford	1859-1866
Otis F. Manson, Townsville	1859-1866
William H. McKee, Raleigh	1859-1866
Christopher Happoldt, Morganton	1859-1866
J. Graham Tull, New Bern	1859-1866
Samuel T. Iredell, Secretary	1859-1866

SECOND BOARD

N. J. Pittman, Tarboro	1866-1872
E. Burke Haywood, Raleigh	1866-1872
R. H. Winborne, Edenton	1866-1872
S. S. Satchwell, Rocky Point	1866-1872
J. J. Summerell, Salisbury	1866-1872
R. B. Haywood, Raleigh	1866-1872
M. Whitehead, Salisbury	1866-1872
J. F. Shaffner, Salem	1866-1872
William Little, Secretary	1866-1872
Thomas F. Wood, Secretary, Wilmington	1867-1872

THIRD BOARD

Charles J. O'Hagan, Greenville	1872-1878
W. A. B. Norcom, Edenton	1872-1878
C. Tate Murphy, Clinton	1872-1878
George A. Foote, Warrenton	1872-1878
J. W. Jones, Tarboro	1872-1878
R. L. Payne, Lexington	1872-1878
Charles Duffy, Jr., Secretary, New Bern	1872-1878

FOURTH BOARD

Peter E. Hines, Raleigh	1878-1884
Thomas D. Haigh, Fayetteville	1878-1884
George L. Kirby, Goldsboro	1878-1884
Thomas F. Wood, Wilmington	1878-1884
Joseph Graham, Charlotte	1878-1884
Robert I. Hicks, Williamston ¹	1878-1880
Richard H. Lewis, Raleigh ²	1880-1884
Henry T. Bahnson, Secretary, Salem	1878-1884

FIFTH BOARD

William R. Wood, Scotland Neck	1884-1890
Augustus W. Knox, Raleigh	1884-1890

Francis Duffy, New Bern	1884-1890
Patrick L. Murphy, Morganton	1884-1890
Willis Alston, Littleton	1884-1890
J. A. Reagan, Weaverville	1884-1890
W. J. H. Bellamy, Secretary, Wilmington	1884-1890

SIXTH AND SEVENTH BOARDS³

R. L. Payne, Jr., Lexington	1890-1892
George W. Purefoy, Asheville	1890-1892
George G. Thomas, Wilmington	1890-1894
Robert S. Young, Concord	1890-1894
William H. Whitehead, Rocky Mount	1890-1896
George W. Long, Graham	1890-1896
L. J. Picot, Secretary, Littleton	1890-1896
Julian M. Baker, Tarboro	1892-1898
H. B. Weaver, Secretary, Asheville	1892-1898
J. M. Hays, Greensboro ⁴	1894-1897
Kemp P. Battle, Jr., Raleigh ⁵	1897-1900
Thomas S. Burbank, Wilmington ¹	1894-1898
Richard H. Whitehead, Chapel Hill ⁴	1896-1898
William H. H. Cobb, Goldsboro ⁶	1898-1900
J. Howell Way, Secretary, Waynesville ⁷	1898-1902
David T. Tayloe, Washington	1896-1902
Thomas E. Anderson, Sec., Statesville	1896-1902
Albert Anderson, Wilson ⁸	1898-1902
Edward C. Register, Charlotte ⁸	1898-1902
Thomas S. McMullan, Hertford ⁸	1900-1902
John C. Walton ⁸	1900-1902

EIGHTH BOARD

A. A. Kent, Lenoir	1902-1908
Charles O'H. Laughinghouse, Greenville	1902-1908
M. H. Fletcher, Asheville	1902-1908
James M. Parrott, Kinston	1902-1908
J. T. J. Battle, Greensboro	1902-1908
Frank H. Russell, Wilmington	1902-1908
George W. Pressly, Secretary, Charlotte ¹	1902-1906
G. T. Sikes, Secretary, Grissom ⁹	1906-1908

³ In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

⁴ Died before the expiration of his term.

⁵ Elected to serve unexpired term of Dr. Hays.

⁶ Elected to serve the unexpired term of Dr. Burbank.

⁷ Elected to serve the unexpired term of Dr. Whitehead.

⁸ Elected for short term expiring in 1902.

⁹ Elected to serve the unexpired term of Dr. Pressly.

¹ Resigned before expiration of term.

² Elected for unexpired term of Dr. Hicks.

NINTH BOARD

Lewis B. McBrayer, Asheville.....	1908-1914
John C. Rodman, Washington.....	1908-1914
William W. McKenzie, Salisbury.....	1908-1914
Henry H. Dodson, Greensboro.....	1908-1914
John Bynum, Winston-Salem.....	1908-1914
J. L. Nicholson, Richlands.....	1908-1914
Benj. K. Hays, Secretary, Oxford.....	1908-1914

TENTH BOARD

Isaac M. Taylor, Morganton.....	1914-1920
John Q. Myers, Charlotte.....	1914-1920
Jacob F. Highsmith, Fayetteville.....	1914-1920
Martin L. Stevens, Asheville.....	1914-1920
Charles T. Harper, Wilmington ⁴	1914-1915
Edwin G. Moore, Elm City ¹⁰	1915-1920
John G. Blount, Washington ¹¹	1914-1920
Hubert A. Royster, Secretary, Raleigh.....	1914-1920

ELEVENTH BOARD

Lester A. Crowell, Lincolnton.....	1920-1926
William P. Holt, Duke.....	1920-1926
J. Gerald Murphy, Wilmington.....	1920-1926
Lucius N. Glenn, Gastonia.....	1920-1926
Clarence A. Shore, Raleigh.....	1920-1926
William M. Jones, Greensboro.....	1920-1926
Kemp P. B. Bonner, Sec., Morehead City.....	1920-1926

TWELFTH BOARD

Paul H. Ringer, Asheville.....	1926-1932
W. Houston Moore, Wilmington.....	1926-1932
T. W. M. Long, Roanoke Rapids.....	1926-1932
W. W. Dawson, Grifton ⁴	1926-1930
J. K. Pepper, Winston-Salem.....	1926-1932
Foy Roberson, Durham.....	1926-1932
John W. McConnell, Secretary, Davidson.....	1926-1932
David T. Tayloe, Jr., Washington ¹²	1930-1932

THIRTEENTH BOARD

Ben F. Royal, Morehead City.....	1932-1938
Benj. J. Lawrence, Secretary, Raleigh.....	1932-1938
F. Webb Griffith, Asheville.....	1932-1938
Hamilton W. McKay, Charlotte.....	1932-1938
J. W. Vernon, Morganton.....	1932-1938
W. H. Smith, Goldsboro.....	1932-1938
K. G. Averitt, Cedar Creek ⁴	1932-1936
Roscoe D. McMillan, Red Springs ¹³	1936-1938

FOURTEENTH BOARD

Karl B. Pace, Greenville.....	1938-1944
William M. Coppridge, Durham.....	1938-1944
Frank A. Sharpe, Greensboro.....	1938-1944
Lewis W. Elias, Asheville ⁴	1938-1943
J. Street Brewer, Roseboro.....	1938-1944
W. D. James, Secretary, Hamlet.....	1938-1944
L. A. Crowell, Jr., Lincolnton.....	1938-1944
John LaBruce Ward, Asheville ¹⁴	1943-1944

FIFTEENTH BOARD

C. W. Armstrong, Salisbury.....	1944-1950
M. D. Bonner, Jamestown.....	1944-1950
T. Leslie Lee, Kinston.....	1944-1950
Roy B. McKnight, Charlotte.....	1944-1950
Paul G. Parker, Erwin.....	1944-1950
M. A. Pittman, Wilson.....	1944-1950
Ivan M. Procter, Secretary, Raleigh.....	1944-1950

¹⁰ Elected to serve the unexpired term of Dr. Harper.

¹¹ Died a few months before the expiration of his term; such a short time that the vacancy was not filled.

¹² Elected to serve unexpired term of Dr. W. W. Dawson.

¹³ Elected to serve unexpired term of Dr. Averitt.

¹⁴ Elected to serve unexpired term of Dr. Elias.

MOORE COUNTY MEDICAL SOCIETY MEDAL

In 1927 the Moore County Medical Society established a fund, the interest from which is used to pay for a medal to be given for the best paper read at the State Society meeting each year. No one is eligible to receive this medal except Fellows of the Medical Society of the State of North Carolina in good standing; no invited guest is allowed to compete.

Each Section Chairman selects a committee of three to decide on the best paper written in their section. The winning papers are then turned over to the State Committee, who select the one to receive the medal. The following Fellows have been awarded this medal:

- 1928—Paul Pressly McCain, M.D.....Sanatorium
 "The Diagnosis and Significance of Juvenile Tuberculosis"
 (From Section on Pediatrics)
- 1929—A. B. Holmes, M.D.....Fairmont
 "The Treatment of Uremia"
 (From Section on Chemistry, Materia Medica and Therapeutics)
- 1930—C. T. Smith, M.D., and W. Bernard Kinlaw, M.D.....Rocky Mount
 "The Clinical Consideration of Anaemia of Pregnancy and of Puerperium"
 (From Section on Practice of Medicine)
- 1931—F. C. Smith, M.D.....Charlotte
 "Practical Value of Perimetry in Intracranial Conditions; Case Reports" (tumors, vascular disease, toxemia, syphilis and trauma)
 (From Section on Eye, Ear, Nose and Throat)
- 1932—Charles I. Allen, M.D.....Wadesboro
 "An Improved Splint for Treating Fractures of the Lower Extremity Showing Reduction and Skeletal Distraction Attachments"
 (From Section on Surgery)
- 1933—H. L. Sloan, M.D.....Charlotte
 "Some General Remarks about Cataract Surgery, With Report of 100 Consecutive Uncomplicated Cataract Operations"
 (From Section on Ophthalmology and Otolaryngology)
- J. R. Adams, M.D.....Charlotte
 "Hypo-glycaemia in Children"
 (From Section on Pediatrics)
- 1934—Fred E. Motley, M.D.....Charlotte
 "Complications of Mastoiditis with Special Reference to Septicemia"
 (From Section on Ophthalmology and Otolaryngology)
- 1935—Arthur H. London, M.D.....Durham
 "The Composition of an Average Pediatrics Practice"
 (From Section on Pediatrics)
- 1936—V. K. Hart, M.D.....Charlotte
 "Etiological and Therapeutic Aspects of Bronchiectasis with Clinical Observations on Bronchial Lavage by the Stitt Method"
 (From Section on Ophthalmology and Otolaryngology)
- 1937—No award made.
- 1938—O. Hunter Jones, M.D.....Charlotte
 "Pelvic Architecture and Classification with its Practical Application"
 (From Section on Gynecology and Obstetrics)

- 1939—Donnell B. Cobb, M.D.....Goldsboro
"Vaginal Ureterolithotomy"
(From Section on Surgery)
- 1940—C. R. Monroe, M.D., C. D. Thomas, M.D.,
and C. L. Gray, M.D.....Pinehurst
"Thoracoplasty and Apicolysis"
(From Section on Surgery)
- 1941—Walter R. Johnson, M.D.....Asheville
"Is Diverticulitis of the Colon a Surgical
Disease?"
(From Section on Practice of Medicine)
- 1942—E. P. Alyea, M.D.....Durham
"Castration for Carcinoma of the Prostate
Gland"
(From Section on Surgery)
- 1943—No award made.
- 1944—D. F. Milam, M.D.....Chapel Hill
"Vitamin C Content of Some North Carolina
Cooked Foods"
(From Section on Public Health and
Education)
- 1945—No Meeting.
- 1946—E. C. Hamblen, M.D.....Durham
"Some Aspects of Sex Endocrinology in Gen-
eral Practice"
(From Section on General Practice of
Medicine and Surgery)
- 1947—W. L. Thomas, M.D.....Durham
"Some Psychosomatic Problems in Gynecology"
(From Section on Gynecology and Obstetrics)

SESSIONS OF THE HOUSE OF DELEGATES

MONDAY AFTERNOON SESSION

May 3, 1948

The House of Delegates of the Medical Society of the State of North Carolina convened for its opening meeting of the Ninety-Fourth Annual Session at 2 p.m. on Monday, May 3, 1948, in the ballroom of the Hotel Carolina, Pinehurst, North Carolina. The meeting was called to order by the president, Dr. James F. Robertson of Wilmington, and the invocation was given by the Reverend Thomas A. Fry, pastor of the Presbyterian Church, Red Springs. The secretary-treasurer, Dr. Roscoe D. McMillan of Red Springs, called the roll and declared a quorum present. Dr. V. K. Hart of Charlotte, the first vice president, then took the chair and President Robertson read his report to the House of Delegates.

Report of the President

I wish to give at this time an account of my stewardship of the North Carolina Medical Society.

The sudden and tragic death of our president, Dr. Frank Sharpe, last November, was a severe loss to the North Carolina Medical Society. He was intensely interested in every activity pertaining to this group, and gave unsparingly of his time, energy, and means to carry on the job which you had given him at our last meeting at Virginia Beach. Since assuming office, I have tried to finish out the year as nearly like the deceased president had planned it as possible. I have attended meetings in Sanford, Kinston, Durham, Greensboro, Camp Lejeune, Lake Waccamaw, and several times in Raleigh and Chapel Hill.

There have been five meetings of the Executive Committee, at each of which much important business was transacted. Some of the most important things discussed and dealt with were rural health education, maternal welfare, the University of North Carolina's four-year medical school, rebates, fee-splitting, the Hospital Saving Association (especially in relation to the merger), state medicine, full insurance coverage for lower income groups, and the American Cancer Society Program as it relates to our state.

I am happy to report that the plans for the four-year medical school are going forward, and that the University authorities are working out with the architects the details of the new teaching hospital to be constructed at Chapel Hill. Under this same program, which is being carried out by the Medical Care Commission, diagnostic clinics and small hospitals have been or are being now built, and others will be constructed.

Let me digress a moment here to pay tribute to the Medical Care Commission, whose chairman, Mr. James H. Clark, is our guest at this meeting. I feel sure that in their hands the program will be administered to the best interest of all concerned. They will not urge communities to build facilities which they will not be able to support, and they will press for these installations in localities where they are most needed. Their work is entirely a labor of love and they are a group free from politics and who are able to resist pressure groups.

The Medical Advisory Committee to the North Carolina State Hospitals was appointed directly by the governor and therefore will make no official report to this body, but I would like to say that they have functioned well. They visited the hospital at Raleigh several times and have also had meetings at the Goldsboro, Kinston and Morganton institutions. In the selection of Dr. David A. Young as director, and the acquisition of hospitals at Camp Sutton and Camp Butner, I feel that the Board of Control and Medical Advisory Committee have rendered a valuable service to the state. In this connection, I feel that our State Board of Medical Examiners has taken a long step forward in agreeing to give a limited license to graduates of grade B schools so that they may practice within the confines of the various State Hospitals. Lack of medical personnel and shortage of beds have been the crying need of the State Hospitals. This act of the State Board of Medical Examiners will, I hope, give the State Hospitals a source of supply of medical personnel which should help to overcome this shortage.

I have attended two meetings of the Board of Trustees of the Hospital Saving Association, at which time all of the activities of the organization were reviewed, but most of the discussion was about the proposed merger between the Hospital Care Association of Durham and the Hospital Saving Association of Chapel Hill. The consensus of opinion of all who have studied the merger was that it should be effected, and, as a matter of fact, it has almost become mandatory if our Association is to be recognized by the National Blue Cross Association. The chief obstacle in the way of the merger is said to be the fact that the public feels that they should have more representation on the board of trustees of the merged organization. As the Hospital Saving Association is now set up, there are four representatives from the State Medical Society, four from the State Hospital Association, and four from the public. In the merged organization, those who have studied the proposal think that the public should have a representation equal to the combined repre-

sentation of the Medical Society and Hospital Association.

At the last meeting of the Executive Committee, this phase of the merger was discussed at length, and the consensus of opinion was that the State Medical Society would not be willing to allow the public to have more representation. Personally I feel that this stand is wrong. I think it is right and proper that the people should have more representation and I do not see how any harm can come from it. This attitude is a very selfish one to take and is one of the reasons, in my opinion, that the public does not hold the medical profession in as high regard as they formerly did. I think, therefore, that in the interest of better public relations we should be willing to allow the public more representation on the board of trustees, so that the merger might be accomplished.

During the year there have been three outstanding medical symposiums. They were held at Wrightsville Beach, at Watts Hospital in Durham, and in Greensboro. Other teaching activities have been the post-graduate lectures and demonstrations given at Lumberton, Raleigh, Salisbury, Greensboro, and High Point. The speakers in these symposiums and post-graduate courses have been men who are outstanding in their fields of endeavor, and one need only attend any one of these courses to be convinced of the intense interest of the physicians of North Carolina and their desire to keep abreast of the times.

In the past few years, when the cost of food, labor, nursing care, and medicines have spiraled to unheard-of figures, we have had it impressed on us more vividly than ever that something must be done to reduce the cost of sickness. When we look for the causes of the high cost of sickness certainly no one thing or group can be held responsible and certainly the physicians have not raised their charges for their services in proportion with other costs. But irrespective of the causes, we are vitally interested in doing what we can to remedy the situation. For unless something real and tangible is done, and done quickly, some form of government control will be forced upon us. What can we do? We can give support wholeheartedly to the program of the Medical Care Commission, which will see that hospitals and diagnostic clinics are established in all areas of our state where there are not now proper facilities for the practice of medicine on a scientific basis. We must support and actively advocate hospital insurance and, for the lowest income group, we should support the plan submitted and recommended by our committee, so ably headed by Dr. V. K. Hart, which proposes a full coverage for medical care, surgery, obstetrics, and hospitalization with a stated fee for the cooperating physicians.

We must all give our time and best talent in support of our Public Relations Committee. Indeed, we must do more. Each one of us must be a public relations committee in dealing with the public. We must give a thorough and painstaking examination to all who come to us for treatment and we must use our best judgment in deciding what other examinations and tests are really needed in arriving at an intelligent diagnosis. Do not submit every patient to all the expensive examinations and gadgets unless there is some real indication for them, as it is such extras which help to make sickness so expensive.

Here and now, I want to pay tribute to our Committee on Maternal Welfare for the very fine work they have done. They have analyzed in detail every maternal death and have given much time and study to the case history and treatment in an effort to determine what could have been done to save these lives.

During the year contributions have been received

by a special committee to establish some kind of a memorial to the late Dr. Paul McCain. I know of no one in the medical profession who was more widely known and respected than he, and it was felt that some form of memorial to him would be proper. This will be a portrait which will be painted by a well known artist, and will be placed in the Sanatorium in Hoke County.

There has been a concerted drive by the American Cancer Society for the raising of funds and for the establishment of cancer clinics throughout the nation. In our own state, three clinics will be established and others will come later. The first of these was formally opened in Wilmington on April 27 and will continue to operate for a half day each week throughout the year. I feel that this is one of the most advanced health measures, and I sincerely believe that great good will come from it, both to the public and to the medical profession, for it will stimulate us to be more diligent and thorough in the detection of early cancer. Because of limited personnel and time, certain rules have been adopted by the cancer division of the State Board of Health. In brief, only people over 40 years of age will be examined, and they will be screened for evidence of cancer in the five most frequent locations—skin, mouth, breast, external genitalia, and rectum. Any suspicious lesion found will cause this patient to be referred to the cancer diagnostic and management clinic, where a most thorough examination will be made using every available laboratory and clinical means to discover early cancer.

One of the most valuable agencies of our State Medical Society is the Board of Medical Examiners. These men have to give much time to their duties, and they have done so graciously and splendidly. Their job is not an easy one and is one for which they receive small thanks, but they have done it well.

The most important units in our medical organization are the county medical societies. It seems to me that medicine is becoming over-organized. There are surgical societies, obstetric societies, pediatric societies, orthopedic societies, eye, ear, nose and throat societies, and all kinds of "colleges." Others are continually springing up, thus reducing the interest and the attendance in the county societies. Today our county medical societies are needed more than ever. They are the mediums through which the individual physician is kept informed, and the agencies through which we gather together and get to know each other. It is through the county medical society that the public is kept informed as to the problems of medicine, and through them liaison with lay groups is to be maintained. The county medical society has a responsibility to the public, to its members, and to organized medicine. If these responsibilities are to be met, there must be understanding and sincerity among the officers and members of the county medical society, and the success of the activities of the county medical society depends on the individual physicians who go to make up the society.

Recently much has been said and published about physicians and hospitals, and much of it is not complimentary. Among other things, it has been brought out that in some communities there are times when no physicians appear to be available to respond to emergency and night calls. We do have responsibilities to the public, and this is one of them. I urge each county medical society and community to have some understanding or agreement whereby the local hospital, drugstore, telephone exchange, or other central agency will have on hand, at all times, the names of those doctors who will be available for emergency or night calls. Nothing can

damage our good standing in the eyes of the public as quickly as a situation where a doctor is urgently needed and no one is willing to accept the call. Any list of this sort must be kept where all-night phone service is known by the public to be available.

The death of Dr. Sharpe brought forcibly to my attention what seems to me to be an anomalous situation in our Constitution and By-Laws. In Chapter 6, Section 2, it is stated: "Should a vacancy occur in the office of the President, the President Elect shall succeed to the presidency." I call this to your attention and recommend that you give it serious thought. This is contrary to the usual procedure, as the first vice president is the logical successor in case of a vacancy, and the president-elect would then serve his term at the time for which he was elected and no more.

Much has been written and said in both lay and medical publications during the past year about kick-backs, fee-splitting, rebates, and various other unethical practices. Your Executive Committee has taken a definite stand on these matters and I am convinced that the Medical Society, through its House of Delegates, should take a positive stand on these practices and should devise some means by which they will be eradicated. Condemning these practices by resolution is not enough. The public has a right to expect that we will put an end to these flagrant violations of medical ethics and underhand methods of receiving remuneration for our services.

Since last October, we have had a full-time executive secretary who has been acquainting himself with the multitude of activities and duties now carried on by the secretary-treasurer. He has visited other states and attended many meetings outside of the state, besides attending all Executive Committee meetings and practically all committee meetings. Mr. Barnes is an intelligent and resourceful man with a background and training which fits him well for the position he now occupies. It is my opinion that it is now time that he actively assume office and take over the duties for which he has been employed. With the advice and assistance of our most able secretary-treasurer, Dr. Roscoe McMillan, and with the help of the other officers of our society, I feel sure that he is prepared to take over and function efficiently. I recommend that his office be established in Raleigh, that all the files and records of the society be placed there, and that sufficient office space of not less than two rooms be maintained for the transaction of all the necessary business of our organization.

From this review you can see at a glance that this society has entered into the realm of big business, and it can be readily seen also that, in order to conduct these varied activities properly, considerable funds will be needed. During the past year, the funds available from dues have not been sufficient to carry on this organization, and it has been necessary to draw funds from our reserve to carry out the necessary activities. This, of course, cannot go on. We must have sufficient funds to meet current expenses, and unless the dues are raised it will be impossible to continue the activities of our society. I am sure you physicians realize that this organization is more important in securing and maintaining sufficient revenue to the individual physician than any other organization with which I am acquainted. It is my belief that, if the dues are raised to \$25.00 per year, sufficient funds to meet necessary expenses will be available, and a small surplus will result so that our reserve may be built up. When you realize that this organization is the very bread and butter of our livelihood, I do not believe any one of you would want to curtail any of its activities. We do not hesitate to give freely

much more than this to civic clubs, Community Chest, and many other promotional bodies, and surely we can give \$25.00 per year to this organization and feel that we are getting many times the equivalent in service and protection.

... Upon motion of Secretary McMillan, seconded by Dr. Oren Moore of Charlotte and carried unanimously, Chairman Hart appointed a committee of three men to study President Robertson's address and make recommendations to the second meeting of the House of Delegates on Wednesday afternoon. The committee consisted of Dr. James H. McNeill of North Wilkesboro as chairman, Dr. Monroe T. Gilmour of Charlotte, and Dr. Donald B. Koonce of Wilmington.

President Robertson took the chair again and called for the report of the secretary-treasurer.

Report of the Secretary-Treasurer

This report will not attempt to enumerate the accomplishments that will be detailed in other fashion by the various committees that follow me this afternoon. Rather the purpose is to acquaint the House of Delegates with certain matters pertaining to the make-up and workings of the Society.

By way of background I want to say I am confident that the reports of the committees this year will indicate the healthy condition of the Society, pertaining, as they do, to so many subjects that are vital in the field of medicine. They reflect the work of committees and officers, representing a cross section of our membership, who have been diligent in their search for means to improve medicine and our Society.

It is gratifying to see a larger number of physicians taking a more active interest in the affairs of the organization. The Society will rejoice that alert and forward-looking men are giving their time and energy to its needs. Our veterans, who have had opportunity to envision medicine from a new perspective, and our younger members, who have come to us with refreshing open minds, are making contributions of strength and enthusiasm. Our elders, with deep appreciation of our heritage, weld into our activities the wisdom of experience.

The death of President Frank Sharpe, at the height of his career, in November, 1947, cast a deep gloom of sorrow over all of us. We shall miss the presence of a genial, friendly, kindly, and courageous man.

Membership in the Society is at its highest level in our history. At the close of the year we had 2276 members, representing 407 honorary fellows and 1869 active fellows—a net gain of 203 over 1946. One hundred and eighty new members became affiliated with the Society during 1947. We have added 90 new members this year. On May 1, the total membership for 1948 is 1988. Since our last meeting 52 doctors have died, 48 of whom were members of the Society.

Visits to districts

As your secretary, I visited nine of the ten districts and expect to visit the one remaining district before the summer is over. It is gratifying to see organized medicine doing its part to meet the growing demands made upon it.

The auditor's report

The auditor's report as of December 31, 1947, is hereto attached and will be published in detail in the August issue of the *Journal*; therefore, I will not go into detail. We have no liabilities. We invested during 1947, \$4,440.00 in Series "F" bonds. This brings the total bonds held at cost value to \$39,324.00, plus the increment in value of the Series "F" bonds of approximately \$1,200.00 due to lapse

of time since the purchase date of the bonds.

Cash receipts and disbursements

For the first time since I assumed office the expense disbursements exceeded revenue receipts by \$152.78 for 1947. This deficit was due in a large measure to salary and travel expense of the executive secretary who was employed during the year.

As information, I have prepared a statement showing in condensed form the balance sheet and the cash receipts and disbursements for each of the years 1944, 1945, 1946, and 1947.

It is interesting to observe the continuous increase in the net worth or unencumbered balance of the Medical Society from year to year, with the exception of the year 1947, between January 1, 1944 and December 31, 1947. It will be seen that the net worth almost doubled during this period.

	Net Worth	Increase During Year	Per Cent of Increase (Basis 100%)
Balance January 1, 1944	\$20,562.18	\$	
Balance December 31, 1944	21,219.06	3,656.88	17.78%
Balance December 31, 1945	30,790.61	6,571.55	31.96%
Balance December 31, 1946	40,706.08	9,915.47	48.22%
Balance December 31, 1947	40,553.30	152.78	.71%
Total increase in four years		\$19,991.12	
Total per cent of increase over balance at January 1, 1944			97.2%

As business manager of the *Journal*, I submit the following statement of income and expenditures for 1947:

Receipts:

Society appropriation	\$15,600.00
Advertising, etc.	16,566.91

Total \$32,166.91

Expenditures:

Editor's salary	\$ 1,800.00
Assistant Editor's salary	2,100.00
Rent	300.00
Printing of Journal	15,965.41

Total \$20,165.41

Excess of receipts over expenditures \$12,008.39
—or an operating loss of \$3,598.50

The publication of the *North Carolina Medical Journal* is a big business within itself. The cost of printing the *Journal* is constantly mounting. The following is a summary of increase from 1944 to 1947:

1944	\$10,187.93
1945	11,922.23
1946	13,286.22
1947	20,165.41

Or a total increase of \$9,997.48

Total per cent of increase
over 1944 — 97.93 per cent

This has been due to increase in labor cost twice in 1947, increase in cost of paper, and the decision of the Editorial Board to assume the responsibility of paying for all cuts for original articles up to \$20.00 per essayist. In 1947 there was more than the usual demand for cuts for individual papers and no way to ascertain the requirements in advance. In this period we did not advance the subscription rate, and made very little increase in advertising rates. It may be that a leveling off of advertising income and an ever-rising curve of expense will necessitate a readjustment of subscription and advertising rates. That is a possibility which the staff of the *Journal* does not contemplate with any more pleasure than the advertisers and subscribers, but it is a possibility which cannot be completely ignored.

Expanding program

We live in a moving world. Medical progress brings medical problems. Our heritage is rich, our accomplishments have been good; but we must continue to build and progress from those foundations.

The expanding activities of the Society and the development of greater usefulness to its members depend upon the financial resources of the organization; therefore, at the direction of the Executive Committee at a meeting held at Pinehurst on February 8, 1948, this office has prepared an estimate of the budget for operations during the fiscal year 1949.

In principle this estimate is based on an expanded program in the operation of the Society's affairs, the necessity for which has been brought about by two primary factors:

1. The natural growth of the Society's membership and affairs and the attendant requisite services demanded by this growth.

2. The current impact of adverse public opinion toward organized medicine and the necessity of meeting certain negative as well as positive challenges.

First, there are approximately 2700 licensed physicians in North Carolina, 2276 of whom are members of the State Society—a growth of 38 per cent in seven years. Your Society has the following responsibilities to these members:

- To maintain an organization to keep abreast of the status of these members at the local, state, and national levels.
- To conduct the multitudinous correspondence incident to the relationship of individual physicians, local societies, district societies, the State Society, and the A.M.A.
- To promote the dissemination of scientific and technical information for the advancement of the profession.
- To maintain and promote the ethical balance required in the practice of medicine and in the field of health and medical care.
- To manage the business affairs of the professional *Journal*.

These responsibilities have thrown an excessive burden upon the part-time executive officers. This has necessitated relief by the engagement of more personnel to carry on the affairs of the Society consistent with the present and anticipated growth in membership and the accompanying demand for service.

At the direction of the Executive Committee, a full-time executive secretary has been employed in the person of Mr. James T. Barnes. Mr. Barnes came to us on September 15, 1947. He has demonstrated his administrative ability and his clear conception of the requirements of the office. He has been indefatigable in the execution of all duties assigned to him, and his contacts with the public as well as with the profession have been commendable. In the pursuit of his duties I feel he will reflect credit and be of inestimable value to the Society.

Second, organized medicine is faced with a situation in which, if it is to survive, it must recognize the impact of public opinion. This is necessary to bring together all groups of people and interests in a combined effort to unite the state in the attainment of the best health and medical care which our people can afford. We need to offer a constructive leadership and service in our public relations through our executive officers and committees as follows:

- The public must know and understand the capacities and limitations of scientific medicine

in our state and the tremendous requirements in men and material involved in bringing scientific discoveries and methods of treatment to sick people.

- B. The public must know the costs involved in training personnel, creating establishments, and conducting services in the field of medical care and health.
- C. The public must know and understand the limitations of present personnel and facilities, and other difficulties encountered in rendering adequate medical and health service in all areas.
- D. The public must know the portents of its own responsibility and share in bringing into play the advantages of modern medical and health services.
- E. The public must recognize the excessive demand on current facilities and personnel and the imbalance between the economic capacity to deliver medical and health services and that reason should moderate the demand until these capacities can be adjusted.

So, your Society proposes to do a job for organized medicine, and to do it requires the broadening of the scope of its organization and activities in such a manner as to inform the public intelligently, correctly and persistently about the problems of medical care and health. We propose action of a positive nature and through this approach we have faith that many of our difficulties may be resolved. This will involve costs which the profession must recognize as essential and necessary. The financial means, as proposed in the budget estimate, should be considered with a limited sense of personal sacrifice when compared with contributions to other civic and professional enterprises where our own professional interests and good will are not so paramountly at stake.

I earnestly request that you give this report and proposed budget serious consideration. Your conclusions and views, gentlemen of the House of Delegates, will decide what course is to be taken to safeguard the interest and promotion of the work of our professional organization.

At the close of another year I wish to express to each of you, the Executive Committee, all other committees, and to President Robertson, my personal gratitude for your creditable work, your thoughtfulness and cooperation during the year.

Respectfully submitted,

ROSCOE D. McMILLAN, M.D.,
Secretary-Treasurer

Proposed Budget for 1948

Receipts		\$41,341.73
Balance January 1, 1948.....\$	26.23	
Assessments (2,000 paying members)	20,000.00	
Interest (net)	287.50	
Sales (anticipated basis 1947)	278.00	
Revenue, unexpected	nil	
Technical exhibits	4,450.00	
Journal advertising	16,300.00	
Expenditures		\$57,737.80
Schedule A.	\$19,129.80	
Schedule B.	20,664.00	
Schedule C.	7,550.00	
Schedule D.	1,100.00	
Schedule E.	5,219.00	
Schedule F.	4,075.00	
Reserves		\$40,524.00
U. S. Bonds		
Cost value	\$39,325.00	
Increment	1,200.00	

Excess of Expenditures

Over Receipts (Current)

\$16,396.07

SCHEDULE OF BUDGET ACCOUNTS

January 1, 1948 to December 31, 1948

A. EXECUTIVE BUDGET		\$19,129.80
A-1 President, expense of	600.00	
A-2 Secretary-treasurer, salary of	2,400.00	
A-3 Secretary-treasurer, travel of	600.00	
A-4 Secretary-treasurer, clerical asst.	1,980.00	
A-5 Secretary-treasurer, office expense (12 months rent, postage, telephone and telegraph, printing and supplies, and repairs and replacements.)	1,600.00	
A-6 Executive secretary, salary of	5,400.00	
A-7 Executive secretary, travel of	1,800.00	
A-8 Executive secretary, clerical asst.	1,800.00	
A-9 Executive office, equipment of	1,000.00	
A-10 Executive office, expense of (8 months rent, postage, telephone and telegraph, printing and supplies, and repairs and replacements.)	1,579.00	
A-11 Bonding	50.00	
A-12 Audit	115.00	
A-13 Taxes (salary tax)	115.80	
A-14 Insurance	90.00	
B. JOURNAL BUDGET		20,664.00
B-1 JOURNAL, publication of	16,000.00	
B-2 JOURNAL, cuts for	300.00	
B-3 Editor, salary of	1,800.00	
B-4 Assistant editor, salary of	2,100.00	
B-5 Editorial office, expense of (12 months rent, postage, telephone and telegraph, printing and supplies, and repairs and replacements.)	300.00	
B-6 Business manager's office, expense of (postage, printing and supplies)	100.00	
B-7 JOURNAL, travel	nil	
B-8 Taxes (salary tax)	39.00	
B-9 Refunds, subscriptions etc.	25.00	
C. INTRA-FUNCTIONAL ACTIVITY BUDGET		7,550.00
C-1 Executive Committee, expense of and travel of councilors	1,140.00	
C-2 Councilors, travel of in districts	250.00	
C-3 Councilors, expense of (postage, printing and supplies)	160.00	
C-4 Legislative Committee, expense of	500.00	
C-5 Public Relations Committee, expense (including previous authorizations)	1,200.00	
C-6 Maternal Welfare Committee, expense (including previous authorizations)	1,300.00	
C-7 Rural Health and Medical Care Committee, expense of (including previous authorizations)	500.00	
C-8 Prepayment Medical Service Hospital Care Fee Committee, expense of	300.00	
C-9 Cancer Committee, expense of	300.00	
C-10 Convention Arrangements Committee, expense of	nil	
C-11 Scientific Committee, expense of	100.00	
C-12 Postage, printing and supplies for committees in general	nil	
C-13 Committee to Work with N. C. Indus. Com. to evolve satisfactory plan for administration Workmen's Compensation Act.	500.00	
D. EXTRA-FUNCTIONAL ACTIVITY BUDGET		1,100.00
D-1 Delegates to A.M.A., expense of (3 at each annual and interim session) at \$150	900.00	
D-2 Conference dues and nat. reports	nil	
D-3 Woman's Auxiliary	200.00	
E. ANNUAL SESSIONS CONVENTION BUDGET		5,219.00
E-1 Exhibit tent	1,500.00	
E-2 Supplier's charges 11 scien. booths	165.00	
E-3 Supplier's charges 49 tech. booths	735.00	
E-4 Freight on exhibit booths (truck)	275.00	
E-5 Wiring exhibit tent (est. net cost)	325.00	
E-6 Programs	439.00	
E-7 Badges	190.00	
E-8 Hotel convention expense	1,000.00	
E-9 Publicity agent	75.00	
E-10 Orchestra	250.00	
E-11 Banquet speaker	200.00	
E-12 Electric amplifier system	50.00	
E-13 Booth title cards	15.00	
F. MISCELLANEOUS BUDGET		4,075.00
F-1 Previous accounts payable	nil	
F-2 Refunds (dues etc.)	200.00	
F-3 Legal counsel, retainer of and fees for	2,000.00	

F 4 Reporting service (convention, Executive Committee, etc.)	800.00
F-5 Guest speakers, expense of and or honorarium	200.00
F 6 President's Jewel	50.00
F 7 Reprint of Roster	125.00
F 8 Contingency and emergency	700.00

Audit Report

January 1, 1947 to December 31, 1947

January 26, 1948

Chairman and Members of the Finance Committee
Medical Society of the State of North Carolina, Inc.
Red Springs, North Carolina

Gentlemen:

Pursuant to engagement, we have made an examination and audit of the Cash Receipt and Disbursement records of Dr. Roscoe D. McMillan, Secretary-Treasurer of the Medical Society of the State of North Carolina, Inc., Red Springs, N. C., for the year ended at December 31, 1947.

A report of such examination and audit, consisting of five Exhibits and two Schedules, enumerated as follows, is submitted herewith, and is subject to the comment contained herein:

- Exhibit A Balance Sheet
- Exhibit B Budget Comparison—Receipts and Disbursements
- Exhibit C Cash Receipts and Disbursements
- Exhibit C-a Cash Receipts and Disbursements—Other Operating Expense
- Exhibit D Comparative Statements
- Schedule 1 Reconciliation of Cash
- Schedule 2 Investment in United States Defense Bonds

Scope of Audit

The scope of the audit consisted of a detailed examination of the office cash book, which book is used as a record of original entry for receipts and disbursements. The receipts as shown therein were accepted as being correct without further audit. All paid and cancelled bank checks and supporting vouchers were examined for the purpose of verifying the correctness of the disbursements. The Assets were verified to the extent set forth hereinafter.

Balance Sheet—Exhibit A

A Balance Sheet, which is designated here as Exhibit A, has been prepared to show the Assets, Liabilities and Net Worth of the Medical Society as of December 31, 1947.

This Balance Sheet has been divided into two sections. One section contains the Current Operating Fund, which represents the Current Assets and Liabilities, while the other Fund has been designated as a Capital or Non-Operating Fund and which contains the office equipment owned and used by the Medical Society at estimated values established in a prior year. The Balance Sheet shows the Net Worth or unencumbered and unappropriated balances of the two Funds to be \$39,350.23 and \$1,203.07, respectively.

The cash in the Scottish Bank, Red Springs, N. C., in the amount of \$26.23, was verified through a reconciliation of the balances as shown by the records of the Secretary-Treasurer of the Medical Society with a statement which was obtained independently from the depository. This reconciliation is shown in detail in Schedule 1 of the report.

The investment in United States Defense and Savings Bonds has been shown at cost value of \$39,324.00, in the Balance Sheet, and in detail in Schedule 2 of this report. These bonds were examined.

The office equipment which has been shown in detail in the Balance Sheet under the heading of

Capital or Non-Operating Fund, was brought forward from an estimate made in a prior year and adjusted for purchases made during the year under review. The items shown herein represent equipment of the Medical Society, now located in the office of Dr. McMillan. As there were no liabilities outstanding against the office equipment, we have shown the entire amount as Net Worth of the Medical Society under an appropriate heading in the Balance Sheet.

No record was found of any liabilities against the Medical Society at the close of the year under audit.

Budget Comparison—Receipts and Disbursements—Exhibit B

A statement showing a Budget Comparison of the Cash Receipts and Disbursements for the current year operations of the Medical Society, has been shown in Exhibit B. This statement is, in effect, a statement of operations, and by examination, it will be seen that the Expense Disbursements exceeded the Revenue Receipts, by \$152.78, for the current year. This amount represents an Operating Deficit and has been deducted from the Unexpended Balance of the Current Fund and shown in the Net Worth section of the Balance Sheet. This deficit was due, in a large measure, to salary and travel expense of an Executive Secretary, which was employed during the year.

Cash Receipts and Disbursements—Exhibit C

A statement showing in detail the Cash Receipts and Disbursement of funds passing through the hands of Dr. Roscoe D. McMillan, Secretary-Treasurer of the Medical Society during the year under review, has been shown in Exhibit C, which may be summarized as follows:

Cash Receipts January 1, 1947.....	\$ 4,730.76	
Cash Receipts during Year	36,103.02	
(Including Refunds)		
Total Cash available	\$40,833.78	
Less—Disbursements During Current Year:		
For Operations		
(Including Refunds) \$35,863.80		
Non-Operating Items	503.75	
Purchase of U. S. A.		
Savings Bonds as		
an Investment	4,440.00	40,807.55

Cash Balance at December 31, 1947.....\$ 26.23

Comparative Statements—Exhibit D

As information to the Medical Society, we have prepared a statement showing in condensed form the Balance Sheet and the Cash Receipts and Disbursements for each of the years 1944, 1945, 1946, and 1947. This statement has been designated as Exhibit D.

It is interesting to observe the continuous increase in the Net Worth or Unencumbered Balance of the Medical Society from year to year, with the exception of the year 1947, between January 1, 1944 and December 31, 1947. It will be seen that the Net Worth almost doubled during this period. As has already been explained, the decrease during 1947 was due, in a large measure, to the employment of a full-time Executive Secretary during the latter part of the year. The following is a summary of the increase in Net Worth during the above referred-to period:

	Net Worth	Increase During Year	Per Cent of Increase (Basis 100%)
Balance January 1, 1944	\$20,562.18		
Balance December 31, 1944	24,219.06	3,656.88	17.8%
Balance December 31, 1945	30,790.61	6,571.55	31.96%
Balance December 31, 1946	40,706.08	9,915.47	48.22%

Balance December 31, 1947	40,553.30	(152.78)	(.71%)
TOTAL INCREASE IN FOUR YEARS	\$19,991.12		
TOTAL PER CENT OF INCREASE OVER BALANCE AT JANUARY 1, 1944			97.22

General Comment

It should be understood that this report has been prepared on a strictly Cash Receipts and Disbursements basis. Therefore, no receivables have been shown in the report which may have been due, but uncollected at the close of the year. Likewise, no Liabilities have been shown.

A surety bond covering faithful performance of the Secretary-Treasurer of the Medical Society was examined by us and appears as follows:

Dr. Roscoe D. McMillan, Secretary-Treasurer
Maryland Casualty Company
Dated 6-15-41—Term Continuous
Premium paid to 6-15-48
Principal Sum \$ 20,000.00

An insurance policy was also examined which covers fire loss in the amount of \$1,500.00, on office equipment, books and records in the office of the Secretary-Treasurer. This policy is dated June 10, 1947 and expires June 10, 1950.

As may be observed by the examination of the statement of U. S. Defense and Savings Bonds, Schedule 2, the Medical Society made an investment during the year of \$4,440.00 in Series "F" Bonds. This brings the total bonds held at cost value, to \$39,324.00; however, there is also an unrecorded increment in value of the Series "F" bonds of approximately \$1,200.00, due to lapse of time since the purchase date of the bonds.

We are glad to inform you that the financial records as maintained by the Secretary-Treasurer, were found, upon examination by us, to have been well kept and in an excellent condition.

In conclusion, we wish to express our appreciation for the many courtesies and cooperation shown us during the course of the audit.

Respectfully submitted,
S. PRESTON DOUGLAS,
Certified Public Accountant

EXHIBIT A—BALANCE SHEET December 31, 1947

ASSETS			
CURRENT OPERATING FUND:			
Cash— (Schedule 1)			
The Scottish Bank, Red Springs, N. C.	\$	26.23	
Investment in U. S. Savings Bonds At Cost (Schedule 2)		39,324.00	
TOTAL ASSETS			
CURRENT OPERATING FUND			\$39,350.23
CAPITAL OR NON-OPERATING FUND:			
Underwood Typewriter	\$115.00		
Wooden File Case Letter-size	21.66		
Typewriter Desk	25.00		
Steel Office Safe	150.00		
Burroughs Adding Machine	200.00		
Checkwriter—Paymaster	40.00		
Electric Mimeograph Machine	300.00		
Steel File Case—Letter-size	20.00		
Four Steel Card Files	20.00		
Office Chairs	32.20		
One Desk	62.55		
Steel Filing Cabinet	24.50		
Office Desk	47.95		
Letter File—Two Drawer	29.16		
Steel Filing Cabinet	71.75		
Office Chairs	40.00	1,203.07	
TOTAL ASSETS			\$40,553.30
LIABILITIES AND NET WORTH			
LIABILITIES			\$ 0 —
NET WORTH:			
Current Operating Fund—			
Balance January 1, 1947	\$39,614.76		
Less—Net Deficit from Operations—Exhibit B	\$152.78		
Expenditures made for Capital Additions	111.75	264.33	39,350.23

Capital Fund—Non-Operating—		
Balance January 1, 1947	\$ 1,091.32	
Plus Purchases during Year from Current Funds	111.75	1,203.07

TOTAL LIABILITIES AND NET WORTH \$40,553.30

EXHIBIT B BUDGET COMPARISON—RECEIPTS AND DISBURSEMENTS

January 1, 1947 to December 31, 1947

	Budget Provision	Actual Receipts or Disbursements	Under (+) Realized Receipts or Over (-) Expended
RECEIPTS:			
Membership Dues—Current and Prior Years (Less Refunds of \$269.00)	15,600.00	\$18,830.00	\$ 3,230.00
Advertising	13,650.00	16,310.81	2,660.81
Other Sources	400.00	564.77	164.77
TOTAL RECEIPTS	\$29,650.00	\$35,705.58	\$ 6,055.58
DISBURSEMENTS:			
Secretary's Office:			
Salary	\$ 2,400.00	\$ 2,400.00	\$ 0 —
Clerical Assistance	1,800.00	1,800.00	— 0 —
Stationery and Stamps	700.00	892.91	192.91
Rent	300.00	300.00	— 0 —
Travel Expense	600.00	600.00	0 —
Auditing	100.00	100.00	0 —
Miscellaneous and Emergency	700.00	580.41	119.59
TOTAL— SECRETARY'S OFFICE	\$ 6,600.00	\$ 6,673.32	\$ 73.32*
North Carolina Medical Journal:			
Editor's Salary	\$ 1,800.00	\$ 1,800.00	\$ 0 —
Asst. Editor's Salary	2,100.00	2,100.00	— 0 —
Rent	300.00	300.00	— 0 —
Printing Journal	12,500.00	15,958.52	3,458.52*
TOTAL— N. C. MEDICAL JOURNAL	\$16,700.00	\$20,158.52	\$ 3,458.52*
All Offices except Secretary's:			
Stationery and Miscellaneous	\$ 400.00	\$ 294.01	\$ 105.99
Councilors' Travel Exp.	250.00	250.00	— 0 —
President's Travel Exp.	400.00	400.00	— 0 —
Executive Committee	500.00	602.56	102.56*
Attorney's Fees and Leg- islative Committee	2,500.00	2,830.62	330.62*
Other Committees	1,000.00	1,037.48	37.48*
State Meeting Reporting	600.00	755.74	155.74*
A.M.A. Delegates	600.00	600.00	— 0 —
Guest Speaker	100.00	100.00	0 —
Executive Secretary:			
Salary	0	1,575.00	1,575.00*
Other Expenses	— 0 —	581.11	581.11*
TOTAL— OTHER OFFICES	\$ 6,350.00	\$ 9,026.52	\$ 2,676.52*
TOTAL DISBURSEMENTS	\$29,650.00	\$35,858.36	\$ 6,208.36*

SUMMARY—BUDGET POSITION

RECEIPTS—Excess of Realized over Anticipated	\$ 6,055.58
DISBURSEMENTS—Increase over Appropriations	6,208.36
NET DEFICIT FROM OPERATIONS	\$ 152.78

EXHIBIT C—CASH RECEIPTS AND DISBURSEMENTS

January 1, 1947 to December 31, 1947

RECEIPTS

CASH RECEIPTS DURING YEAR:	
Membership Dues—Current and Prior Years	\$19,099.00
Medical Journal—Advertising	16,310.81
Medical Journal—Subscriptions and Issues Sold	96.60
Medical Journal—Memorial Pages	159.50
Sale of Rosters	22.67
Interest from U. S. Savings Bonds—Series "G"	287.50
Refund for Engraving	6.89
Refund of Travel and Maintenance to State Secretaries' Conference by Executive Secretary	120.05

TOTAL CASH RECEIPTS DURING YEAR	\$36,103.02
CASH BALANCE JANUARY 1, 1947	4,730.76

TOTAL CASH AVAILABLE DURING YEAR \$40,833.78

DISBURSEMENTS

CASH DISBURSEMENTS DURING YEAR:	
Secretary's Office:	
Salary of Secretary	\$ 2,400.00

Salary of Clerical Assistant.....	1,800.00	
Rent	300.00	
Travel	600.00	
Surety Bond of Secretary	50.00	
Stationery, Supplies and Postage	892.91	
Telephone and Telegraph	398.41	
Auditing	\$ 100.00	
Insurance	90.00	
Federal O. A. B. Tax	12.00	6,673.32
North Carolina Medical Journal:		
Salary of Editor	\$ 1,800.00	
Salary of Assistant Editor	2,100.00	
Rent	300.00	
Printing and Mailing Journal	15,929.41	
Federal O. A. B. Tax	36.00	20,165.41
Other Operating Expense—Exhibit C-a.....		9,025.07
TOTAL DISBURSEMENTS FOR OPERATING EXPENSE		\$35,863.80
Other Disbursements—Non-Operating:		
Refund of Membership Dues	\$ 269.00	
Purchase of Filing Cabinet and Chair	111.75	
Purchase of U. S. Savings Bonds	4,440.00	
Contribution to National Association of Nurse Education	80.00	
Refund of Subscription to Journal	1.50	
Flowers for Deceased Members	41.50	4,943.75
TOTAL DISBURSEMENTS DURING YEAR		\$40,807.55
CASH BALANCE DECEMBER 31, 1947:		
The Scottish Bank, Red Springs, N. C.		26.23
TOTAL CASH DISBURSEMENTS AND BALANCE		\$40,833.78

EXHIBIT C-a

OTHER OPERATING EXPENSE:		
President's Travel Expense	\$ 400.00	
President's Jewel	49.95	
Councilors' Travel Expense	250.00	
Delegates to A. M. A.	600.00	
Reporting Convention	753.74	
Convention Speaker	100.00	
Executive Committee:		
Postage, Telegraph, etc.	602.56	
Executive Secretary:		
Salary	\$1,575.00	
Travel and Other Expenses	685.41	
Federal O. A. B. Tax	15.75	2,276.16
Legislative Committee:		
Attorney Fees	\$2,337.41	
Other Committee Expenses—		
Postage, Clerical, etc.	493.21	2,830.62
Cancer Committee—Salary of Secretary	300.00	
Other Committees—Clerical, Stationery, Postage, etc.	737.48	
Reprint of Roster	122.56	\$ 9,025.07
TOTAL OTHER OPERATING EXPENSE—		
EXHIBIT C		\$ 9,025.07

EXHIBIT D—COMPARATIVE STATEMENTS

January 1, 1944 to December 31, 1947

	Year 1944	Year 1945	Year 1946	Year 1947
BALANCE SHEET—DECEMBER 31, OF EACH YEAR				
Assets				
Cash in Bank	\$ 1,840.85	\$ 5,457.11	\$ 4,730.76	\$ 26.23
Investment in U.S.				
Bonds—at Cost	21,564.00	24,524.00	31,884.00	39,324.00
Other Current Assets	— 0 —	4.00	— 0 —	— 0 —
Equipment				
Capital Assets	989.41	1,013.91	1,091.32	1,203.07
TOTAL ASSETS	\$24,394.26	\$30,999.02	\$40,706.08	\$40,553.30
Liabilities				
Federal With-				
holding Tax	\$ 173.20	\$ 208.41	\$ — 0	\$ — 0
Net Worth				
Net Worth—Balance at end of each Year	24,219.06	30,790.61	40,706.08	40,553.30
TOTAL LIABILITIES AND NET WORTH	\$24,394.26	\$30,999.03	\$40,706.08	\$40,553.30
NET INCREASE IN NET WORTH OR SURPLUS DURING YEAR	\$ 3,656.88	\$ 6,571.57	\$ 9,915.47	(— 152.78)

CASH RECEIPTS AND DISBURSEMENTS DURING EACH YEAR

CASH RECEIPTS DURING YEAR:				
Membership Dues	\$12,978.00	\$12,636.00	\$16,971.00	\$19,099.00
Advertising	8,739.31	10,814.12	15,771.69	16,310.81

Other Receipts	358.70	2,609.83	378.40	693.21
TOTAL CASH RECEIPTS DURING YEAR	\$22,076.01	\$26,059.95	\$33,121.09	\$36,103.02
CASH BALANCE AT JANUARY 1 OF EACH YEAR	3,151.52	1,840.85	5,457.11	1,730.76
TOTAL CASH AVAILABLE	\$25,227.53	\$27,900.80	\$38,578.20	\$40,833.78
CASH DISBURSEMENTS DURING YEAR:				
Secretary's Office	\$ 5,718.48	\$ 5,579.68	\$ 6,226.14	\$ 6,673.32
N. C. Medical Journal	10,187.93	11,922.23	13,286.22	20,165.41
Other Operating Expense	2,417.72	1,845.89	3,540.26	9,025.07
Investments, Refunds and Other	5,062.55	3,095.89	10,794.82	4,943.75
TOTAL CASH DISBURSEMENTS DURING YEAR	\$23,386.68	\$22,443.69	\$33,847.44	\$40,807.55
BALANCE OF CASH AT END OF EACH YEAR	\$ 1,840.85	\$ 5,457.11	\$ 4,730.76	\$ 26.23

SCHEDULE 1—RECONCILIATION OF CASH

December 31, 1947

CASH ON HAND	\$ — 0 —
THE SCOTTISH BANK, RED SPRINGS, N. C.:	
Checking Account—	
Balance per Bank Statement	\$ 1,902.45
Plus—Deposits in Transit	— 0 —
	\$ 1,902.45

Less—Outstanding Checks:

Number	Amount	
287	\$ 8.00	
307	16.00	
404	4.00	
560	7.80	
763	14.00	
1323	25.00	
1325	10.00	
1329	100.00	
1335	100.00	
1337	37.87	
1339	8.05	
1340	256.30	
1341	381.20	
1342	161.45	
1343	147.95	
1344	132.30	
1345	25.00	
1346	372.30	
1347	57.00	
1348	12.00	1,876.22
		26.23

TOTAL CASH—EXHIBIT A

\$ 26.23

SCHEDULE 2—INVESTMENT IN UNITED STATES BONDS

December 31, 1947

DEFENSE BONDS	DATE OF ISSUE	DATE OF MATURITY	PAR VALUE AT MATURITY	COST
SERIES "F":				
No. M75369F	12-1-41	12-1-53	\$ 1,000.00	\$ 740.00
M75370F	12-1-41	12-1-53	1,000.00	740.00
M75371F	12-1-41	12-1-53	1,000.00	740.00
M75372F	12-1-41	12-1-53	1,000.00	740.00
M75373F	12-1-41	12-1-53	1,000.00	740.00
M75374F	12-1-41	12-1-53	1,000.00	740.00
M98838F	1-1-42	1-1-54	1,000.00	740.00
M98837F	1-1-42	1-1-54	1,000.00	740.00
M98836F	1-1-42	1-1-54	1,000.00	740.00
M98835F	1-1-42	1-1-54	1,000.00	740.00
M98834F	1-1-42	1-1-54	1,000.00	740.00
M98833F	1-1-42	1-1-54	1,000.00	740.00
C89019F	12-1-41	12-1-53	100.00	74.00
C89020F	12-1-41	12-1-53	100.00	74.00
C89021F	12-1-41	12-1-53	100.00	74.00
C89022F	12-1-41	12-1-53	100.00	74.00
C89023F	12-1-41	12-1-53	100.00	74.00
C89024F	12-1-41	12-1-53	100.00	74.00
C89025F	12-1-41	12-1-53	100.00	74.00
C89026F	12-1-41	12-1-53	100.00	74.00
C89818F	1-1-42	1-1-54	100.00	74.00
C89819F	1-1-42	1-1-54	100.00	74.00
C89820F	1-1-42	1-1-54	100.00	74.00
C89821F	1-1-42	1-1-54	100.00	74.00
C89822F	1-1-42	1-1-54	100.00	74.00
C89823F	1-1-42	1-1-54	100.00	74.00
C89824F	1-1-42	1-1-54	100.00	74.00
C89825F	1-1-42	1-1-54	100.00	74.00

SAVINGS BONDS—SERIES "F":

No. M117281F	5-1-45	5-1-57	1,000.00	740.00
M117282F	5-1-45	5-1-57	1,000.00	740.00
M1236678F	11-1-45	11-1-57	1,000.00	740.00
M1236679F	11-1-45	11-1-57	1,000.00	740.00

M1278173F	1-1-46	1-1-58	1,000.00	710.00
M1278150F	1-1-46	1-1-58	1,000.00	710.00
M1278151F	1-1-46	1-1-58	1,000.00	710.00
M1278152F	1-1-46	1-1-58	1,000.00	710.00
M1338158F	8-1-46	8-1-58	1,000.00	710.00
M1338159F	8-1-46	8-1-58	1,000.00	710.00
M1338160F	8-1-46	8-1-58	1,000.00	710.00
M1338161F	8-1-46	8-1-58	1,000.00	710.00
M1338162F	8-1-46	8-1-58	1,000.00	710.00
M1338163F	8-1-46	8-1-58	1,000.00	710.00
M1372377F	8-1-46	8-1-58	1,000.00	710.00
M1372378F	8-1-46	8-1-58	1,000.00	710.00
M1372379F	8-1-46	8-1-58	1,000.00	710.00
M1372380F	8-1-46	8-1-58	1,000.00	710.00
M1423184F	1-22-47	1-1-59	1,000.00	710.00
M1423185F	1-22-47	1-1-59	1,000.00	710.00
M1423186F	1-22-47	1-1-59	1,000.00	710.00
M1423187F	1-22-47	1-1-59	1,000.00	710.00
M1423188F	1-22-47	1-1-59	1,000.00	710.00
M1423189F	1-22-47	1-1-59	1,000.00	710.00
SAVINGS BONDS SERIES "G":				
Interest Rate 2 1/2% payable semi-annually from date of issue				
No. M1186465G	12-1-42	12-1-54	1,000.00	1,000.00
M1186466G	12-1-42	12-1-54	1,000.00	1,000.00
M1376541G	1-1-43	1-1-55	1,000.00	1,000.00
M1376545G	1-1-43	1-1-55	1,000.00	1,000.00
M1376546G	1-1-43	1-1-55	1,000.00	1,000.00
D616518G	1-1-43	1-1-55	500.00	500.00
M1905733G	9-1-43	9-1-55	1,000.00	1,000.00
M2355967G	2-1-44	2-1-56	1,000.00	1,000.00
M2700604G	1-1-44	1-1-56	1,000.00	1,000.00
M2700600G	1-1-44	1-1-56	1,000.00	1,000.00
M2772895G	6-1-44	6-1-56	1,000.00	1,000.00
M2772896G	6-1-44	6-1-56	1,000.00	1,000.00
TOTAL PAR VALUE AT MATURITY			\$19,100.00	
TOTAL COST VALUE AT DATE OF ACQUISITION—EXHIBIT A				\$39,324.00

... President Robertson introduced the executive secretary, Mr. James T. Barnes, who read his report.

Report of the Executive Secretary

Following notification of appointment in July of 1947, I reported to your president, the late Dr. Frank A. Sharpe, on August 13, 1947, that I would be available for duty on and after September 16, and by a subsequent arrangement with your constitutional secretary actually reported to his headquarters for assignment on September 16, 1947. In the interim my time has been spent in the following activities: a careful study of important episodes of the Society's activities as revealed by the annual transactions of previous years; study of the files containing the extensive correspondence of the present and immediate past secretaries; study of files related to the essential cooperation with the American Medical Association and other medical organizations at the national level; a study of membership rolls and the various procedures incident to their proper maintenance, the collection of dues, and corrections and additions to the rosters; study of files relating to component societies and their functions; a careful study of the Constitution and By-Laws, particularly of the duties there prescribed for the secretary; a study of the provisions of the Medical Practice Act; a study of the published code of ethics; and the study of a vast amount of printed material, accumulated and daily flowing through the office of the secretary in the form of news releases, reports, brochures of state and national medical organizations, and medical journals of all descriptions—giving emphasis to articles containing state-society-activity reports and public-relations programs. Considerable time has been devoted to reviewing daily correspondence with the secretary and the office secretary and in noting procedure and content of replies formulated in the dispatch of this phase of the business. A large number of accumulated and current reports of functional committees have been reviewed to denote the procedure in these activities, to detect the philosophy of the professional participants, and to observe the conclusions and recom-

mendations reached in the process of evolving policy considerations for the Executive Committee's action.

I have attended six district society meetings and two county society meetings, speaking briefly at each on the invitation of the secretary or the president. I have attended one symposium. The reception so far has been kind and considerate in every respect. I attended superior court two days observing the legal procedure and content in handling the trial of an offender of the Medical Practice Act, which will add to background experience in previous work with this and other courts of the state. Several conferences have been held with retained counsel on the subject matter of medicine and related legal and legislative activity.

I attended the annual sessions of the Medical Society of Virginia, where the opportunity was afforded to observe active sessions of the State Council, House of Delegates, scientific sessions, Woman's Auxiliary (related to a public relations program for the State Society) and a special meeting of the Virginia Medical Service (medical prepayment program); and to observe the scientific and technical exhibits, where the interest and cooperation of exhibitors was elicited toward participation in the ninety-fourth annual sessions in North Carolina. This visit was personally very helpful, aside from the possibility of having furthered good relationships between the officials and physicians of that society, all of whom gave helpful information and suggestions to me.

I have attended eight functional committee meetings and three Executive Committee meetings. I have been markedly impressed as to the resourcefulness of these committees of the Society and with the determination to make their functions and activities vital to the life of organized medicine in the state. There is undoubtedly much that a full-time person can do to facilitate the work of these committees, some of which have definite plans in that direction; and it is with these that I shall desire to work closely as we move into another year.

During November, 1947, an orientation visit was made to A.M.A. headquarters in Chicago and valuable observations were made as to the complete facility there for conducting the important work of its various divisions. Several consultations with ranking members of the division staff were held in an effort to get a fuller understanding of the essential relationships which must exist between the state and national levels of medical organization activity. While in Chicago, I represented the State Society at a conference on the home-town care of veterans and a conference of state secretaries and editors. These conferences were particularly helpful to several lay workers who had just undertaken executive or promotional work for state societies. While on this mission I took advantage of the opportunity to visit the office of the executive secretary of the District of Columbia Medical Association. This afforded me the privilege of observing in considerable detail an office conducting an outstanding program of services.

By arrangement of the secretary, a week was spent in the office of the executive secretary of the West Virginia Medical Association in late November. This is a very old set-up, having been established about twenty-five years ago. A careful study was made of all records, including the business affairs of the association and its management of the Journal, including the editing and printing of the Journal. While in that state I attended a state-wide conference on rural health, from which much help for future guidance was secured and some of the pitfalls to be guarded against were noted.

Numerous reports containing data pertaining to

North Carolina have been compiled at the request of various A.M.A. Councils, and forwarded for your Society. There are increasing evidences that more of this type of service will be required of the executive office in the months and years to follow.

In recent months the constitutional secretary has assigned more and more responsibility to the executive secretary. A considerable amount of general correspondence is now being conducted, and I have entered into more of the routine and daily responsibilities devolving upon an executive office. With the increased sense of what is the philosophy of organized medicine, enhanced by several months of close observation and participation in the secretary's office and his work, I believe that I can now begin to be much more useful to the Society. I shall approach the job with deep humility, but with a strong determination to learn and to serve the best interest of medicine in this day when it is being woefully beset from many points of view. I will succeed to the extent that I find the spirit of understanding and guidance in the great number of professional men in all levels of medical organization. It is from the grass roots that such understanding and guidance must come. Of this, I sense assurance in that there is not such a group in which one will find greater capacity for leadership than in the medical men of today. With your help, and with the help of God, I shall do my best.

Respectfully submitted,
JAMES T. BARNES

Reports of the Councilors

First District—Dr. John A. Payne (Sunbury) reporting for Dr. Zack D. Owens (Elizabeth City): In the year 1947 we had three meetings—one on March 26 at Elizabeth City, one in August at Nags Head, and one in December at Windsor. The fellows have shown great interest; the attendance has been good; and there have been no irregularities in the First District.

Second District—Dr. John C. Tayloe (Washington): The Second District Medical Society, during the year of 1947-1948, had their annual meeting in New Bern, with approximately a hundred members present. Interest in the District and State Medical Societies has been pronounced through the Second District Medical Society during this year. All of the counties have monthly meetings at which scientific papers are presented and medical and surgical problems are discussed. We are glad to welcome back to membership many who were absent during the war. There were no reports of any irregular medical practice acts during the year.

Third District—Dr. Donald B. Koonce (Wilmington): The affairs of the Third District Medical Society have progressed satisfactorily and uneventfully during the past year. There have been no serious disturbances or unusual conditions demanding correction. Two excellent and well-attended meetings were held under the able presidency of Dr. Amos Johnson, of Garland. At the last meeting (April 22) Dr. W. E. Miller, of Whiteville, was elected president for the ensuing year.

Fourth District—Dr. Newsom P. Battle (Rocky Mount): The component societies of the Fourth District have had regular, well-attended meetings; the scientific programs have been on a very high level; and the ethical standards of organized medicine have been supported.

In Edgecombe County one physician was practicing without a license. As a result of the efficient work of the Board of Medical Examiners and the support of the law and of organized medicine, this

physician has been stopped from the practice of medicine and is now serving in a hospital in the state. Lest there be some misunderstanding from something some of you gentlemen might have heard, I should like to say that the Edgecombe-Nash Medical Society stood behind the Board of Medical Examiners and organized medicine. There were some physicians in Edgecombe County who, for reasons satisfactory to themselves, were in favor of having action withheld for the moment in this case, so that the community could equip itself with a physician. However, the Board of Medical Examiners insisted that the law take its course, and that was done.

The Fourth District Medical Society has quarterly meetings. The meetings have been well attended, and the programs have been unusually good. It is my opinion that the Fourth District is in good condition, and the District is planning to carry on its good work throughout the coming year.

Fifth District—Secretary McMillan reporting for Dr. John N. Robertson (Fayetteville): I have just had a telegram from Dr. Robertson saying that he could not be here this afternoon but that he wished to report that the Fifth District is in excellent condition and doing fine work.

Sixth District—Dr. Millard D. Hill (Raleigh): I am happy to report that all the county societies in my district are having regular meetings, well attended, with excellent programs. The District Society has met regularly, the last meeting being held at the State Hospital, Camp Butner, as guests of that institution. To my knowledge harmony and cooperation prevails in each county. I am not aware of any litigation against any member in my district at this time for malpractice.

Seventh District—Dr. Elias S. Faison (Charlotte): I am pleased to report that the Seventh District Society has functioned smoothly for the years 1947-48. The meetings have been regular, with good attendance and excellent papers.

There is one exception to this report, and that concerns Montgomery County. Due to the paucity of doctors, this society is unorganized, and I recommend to the House of Delegates that they be joined with Stanly County.

... This recommendation was put to vote and passed without opposition.

Eighth District—Dr. James H. McNeill (North Wilkesboro): Your councilor attended the meetings of the Executive Committee of the Medical Society. He reported the actions taken therein to the component county societies.

The American Cancer Society has approached the doctors of the Wilkes-Alleghany County Medical Society relative to making an educational film concerning cancer-detection centers. As there was some question in our minds as to the ethics of this situation, we presented this matter to the Executive Committee and obtained their permission to participate.

The American Medical Association section on hospitals sent a request to this office for information concerning the Stokes Clinic at Walnut Cove. Information concerning this clinic was obtained from neighboring doctors and was forwarded to the American Medical Association.

During the year a section of the American Academy of General Practitioners was formed in North Carolina. Your councilor cooperated with the organizing group in furnishing the names of outstanding practitioners in our district.

In the fall of 1947 Dr. B. O. Choate of Sparta was tried for practicing criminal abortion. Dr. F. C. Hubbard of North Wilkesboro, Dr. H. L. Johnson of Elkin, Dr. Roy Mitchell of Mt. Airy, and I testified

in the case. Dr. Choate was convicted of manslaughter in performing an illegal abortion. He appealed his case, and upon review by the Supreme Court a new trial was granted.

Your councilor cooperated with the State Board of Medical Examiners in the case of one of our members who was accused of narcotic addiction.

In the fall of 1947 the Eighth District meeting was held in North Wilkesboro. It was well attended. At that meeting Dr. Stevens of Greensboro was elected president for the ensuing term. Greensboro was selected as the site of the spring meeting. During the late winter and early spring the Guilford County Medical Society group has been having many meetings and symposiums. On this account it was thought best to defer the meetings usually held before the State Medical Society until June of this year.

There are two counties, Ashe and Watauga, now in the Ninth District, which want to join the Eighth District, purely for reasons of convenience in attending meetings. Those two counties have united to form one society. I therefore offer the following motion:

RESOLVED, that the Ashe-Watauga Counties Medical Society be transferred from District Nine to District Eight.

... This motion was seconded and carried unanimously.

Ninth District—Dr. Irving E. Shafer (Salisbury): The Ninth District Medical Society held its annual meeting at Mooresville on September 25, 1947. This was a splendid meeting with good attendance. The afternoon session was devoted to scientific papers, which were interesting and informative.

The evening meeting was a dinner at the American Legion Hut, with Dr. James W. Davis, Statesville, toastmaster. Brigadier General George E. Armstrong, Deputy Surgeon General of the U. S. Army, was the guest speaker. Two of the state officers attended the annual meeting—the president, Dr. Sharpe (now deceased), and the secretary, Dr. Roscoe McMillan. Dr. Roy Tatum, of Taylorsville, was elected president and Dr. J. S. Holbrook, of Statesville, secretary of the Ninth District. The 1948 annual meeting will be in Statesville the fourth Thursday of September.

The Rowan-Davie County Medical Society sponsored the University Extension Course this year, which covered ten meetings. The course consisted of an afternoon clinic at 4, social hour at 6, and a lecture at 7. Lectures were given by outstanding men in their field of medicine. About 68 doctors attended these lectures, and benefited greatly from them. The Society plans a similar course again next year.

Everything is running smoothly in the Ninth District, which has a number of new doctors. It is felt that medical ethics should be stressed, so the young men will know their duties to their fellow professional men.

Tenth District—Dr. D. M. McIntosh, Sr. (Old Fort): We have had two meetings of the Tenth District Medical Society during the past year. The meetings have been well attended, and a goodly number of new physicians who have recently moved into our district were present. Interesting papers were read and discussed, and everyone seemed to enjoy the renewal of friendships.

There have been a few irregularities, due principally to some unethical conduct; but they have been adjudicated harmoniously. The most serious one was from Polk County and concerned Dr. Ralph di Cosola, of Tryon, who located there about a year and a half ago. He was charged with misrepresentation and grossly unethical conduct. He admitted his guilt and voluntarily resigned from the Polk

County Medical Society and agreed to leave the state, on or about the twenty-fifth of May of this year.

The county societies have been meeting with fair regularity; but, owing to the small number of doctors in several of our counties and to their being exceptionally busy, it has been difficult for them to hold regular meetings. Steps are being taken to effect a new grouping of some of these counties. So the prospect of having organized medicine through the whole district looks very encouraging.

Recognition of the Delegate from Virginia

President Robertson recognized Dr. C. L. Harrell of Norfolk, official delegate of the Medical Society of Virginia to this meeting. Dr. Harrell extended greetings from the Medical Society of Virginia and invited any doctors who would to attend the next meeting of that society, to be held at the John Marshall Hotel, Richmond, October 17-20, 1948.

Report of the Delegates to the American Medical Association

Centennial Meeting held at Atlantic City, June 9-13, 1947

The attendance at this meeting was the largest in its history, with a registration of 15,667 doctors. The first meeting attended by your delegates was the Secretaries' Conference held in the Traymore Hotel on June 8, 1947. There were about 250 secretaries attending this conference. The interest was such that the gathering voted for a similar conference in June, 1948, when the American Medical Association meets in Chicago. The House of Delegates instructed the Board of Trustees to prepare for a similar conference. These meetings are both instructive and inspirational to all of those attending. I hope that many of our county medical society officers will plan to attend the meeting in Chicago next June.

Guests were introduced to the House of Delegates from many foreign countries.

There was read to the House of Delegates a long telegram sent to President Shoulders by Senator Murray about his bill. This telegram was acknowledged by President Shoulders.

President Truman addressed a long letter to our secretary-manager, Dr. George Lull. This letter was read to the House of Delegates. The letter had many statements commending our profession for the great and useful service rendered our country in its hour of need as well as commending us upon our century of progress.

Many resolutions of far-reaching import were read and acted upon. Many of these resolutions had to do with the increase of general practitioners of medicine. At the present time 60 per cent of the graduates in medicine enter the specialties and 40 per cent enter the general practice of medicine.

All registered hospitals are being requested to have a section of their staff open to general practitioners who are in good standing in their county medical societies.

On May 1, 1947, the membership of the American Medical Association was 131,700. Delegates representing this Society were Dr. Wingate Johnson (alternate for Dr. Roscoe McMillan), Dr. Grady Dixon (alternate for Dr. Hamilton McKay), and Dr. C. F. Strosnider, delegate. Dr. Wingate Johnson was chairman of the Reference Committee on General Practice. Dr. C. F. Strosnider was a member of the Credential and Registration Committee.

The House of Delegates selected Chicago as the 1948 convention city, Atlantic City for 1949, and San Francisco for 1950.

The House of Delegates adopted the following recommendations of President Edward L. Bortz:

1. A two-day scientific session for general practitioners at the time of the semi-annual meeting of the House of Delegates.

2. Change of meeting place for the semi-annual session; it is to convene in a different geographic district each year, at which time the two-day session for general practitioners will be held.

3. Establishment by the House of Delegates of a Committee on Nursing Problems.

4. Active cooperation by the Association with government officials to work out a program for prompt medical service in case of another national emergency.

5. The House of Delegates to take under advisement a future building program for the Association headquarters.

Many are the problems of the Association, as was evidenced by the four days of concentrated endeavor by the members of the House of Delegates who participated in the Atlantic City meeting.

Cleveland Interim Session

The interim session of the House of Delegates was held in the ballroom of the Statler Hotel, Cleveland, Ohio, January 5 and 6, 1948. One hundred and sixty-seven delegates out of a total of 175 registered for this session. Our state was represented by Dr. Grady Dixon (alternate for Dr. Hamilton McKay), Dr. W. C. Davison (alternate for Dr. Roscoe McMillan), and Dr. C. F. Strosnider, delegate. Dr. Davison served on the Reference Committee on General Practice and Dr. C. F. Strosnider served as a member of the Registration and Credentials Committee.

Three names of general practitioners were presented to the House of Delegates as candidates for the General Practitioner's Award. Dr. Sudan of Colorado, having received the majority of the votes cast, was declared elected to receive said award. Any practitioner's name can be forwarded to the Board of Trustees of the A.M.A., with a record of his achievement as a general practitioner, community service of all kinds, and scholastic attainments. His state, county or district medical society or any individual, club, or other organization can present his name for this honor.

Numerous resolutions were introduced and acted on.

The Board of Trustees reported that the cost of paper alone was \$106,000.00 more than it was last year, and that this, together with the general rise in cost of labor, material, etc., made it imperative that they have more money to operate the business of the Association. After this report had been discussed, a resolution was presented to the effect that the cost of fellowship and the *Journal* be increased from \$8.00 to \$12.00 per annum for the year 1948, and that the trustees could make the dues and cost of the *Journal* not to exceed \$12.00 per annum after 1948. This resolution was acted upon favorably by the reference committee and the House of Delegates.

The A.M.A. has recently employed several outstanding public relations experts to assist the Association in getting the public acquainted with matters of medical economics and policies of our organization.

In the future the speaker of the House will publish the names of the members of all special and standing committees one month prior to the annual or interim meeting.

Our Association took a prominent part in the formation of the World Medical Association, which was organized in September, 1947, in Paris, France. The governing body of this organization is composed

of two delegates from each cooperating nation.

Finally, I want to assure you that it has been a genuine pleasure for me to serve you as one of your representatives to the American Medical Association during the past two years.

Respectfully submitted,
C. F. STROSNIDER, M.D.

Reports of Delegates to Other Societies

Medical Society of Virginia—Dr. Harry L. Johnson (Elkin): The Medical Society of Virginia met at Roanoke on October 13, 14, and 15, 1947. The meeting was well attended, and there were a number of excellent papers presented. I attended most of the sessions, and thank you for the privilege of being present as your representative at that meeting.

Medical Association of Georgia—Dr. Ben H. Kendall (Shelby): The Medical Association of Georgia held its ninety-eighth annual session in Atlanta, April 27 through April 30, 1948.

A very instructive scientific program was presented, with interesting discussions.

The business sessions were concerned with plans to improve public relations, increase interest in post-graduate study for physicians, and increase the number of small training schools for nurses. Preparations were being made, depending upon the passage of legal authority, to establish a prepaid insurance plan for hospital and medical care.

The exhibits were in the spacious Fulton County Academy of Medicine Building, where some of the meetings were held. Many kindnesses were extended to your delegate, who was most grateful for the opportunity to attend the meeting.

South Carolina Medical Association—A member: The South Carolina meeting had not been held. It is to be held next week.

Tennessee State Medical Association—Dr. B. O. Edwards (Asheville): Mr. President, on account of the shortage of coal and the curtailment of railroad service we did not get over to the meeting of the Tennessee Society.

North Carolina Dental Society—Dr. B. O. Edwards (Asheville):

Report of the Delegate to North Carolina Dental Society

The North Carolina Dental Society met in Asheville, April 26, 27, and 28, 1948, in their ninety-second anniversary meeting. I attended as your delegate. I was cordially received, and asked to speak. I gave them the greetings and good wishes of the officers and members of this Society. I spoke of the pleasant and cordial relations that now exist between the two societies. I expressed the hope that we would continue to work in harmony. I also invited them to send a delegate to this meeting of our Society.

They had about six hundred and fifty dentists in attendance. One of the high lights of this meeting was an address by Mr. M. H. Peterson, the associate administrator of the National Committee of Dentists and of the National Physicians' Committee, whose subject was "The Continuing Threat of Collectivist Planning." It was a good speech. The best thought he advanced was that the best work done against the Murray-Wagner-Dingell Bill was not done in Washington, but was done back home in the congressmen's districts, by the dentists, and doctors and their friends.

The Society voted unanimously for the establishment of a dental college in North Carolina, to be located either at Carolina, Duke, or the Bowman Gray School of Medicine. They discussed at length "Recent Advancements in Drug Therapy," and

"Dental Education." Dr. Walter McFall was named president-elect.

It appeared to me that they had a highly successful meeting. I would like to say that it was a pleasure to me to have the privilege of representing this Society at their meeting.

Respectfully submitted,
B. O. EDWARDS, M.D.

**Report of the Board of Medical Examiners
May 2, 1947—May 2, 1948**

The past twelve months has been an important period in the life of the medical profession of the state of North Carolina. The Board of Medical Examiners has had its full share of problems that confront the profession and the citizens of our state. This report is prepared in an effort to give you, the State Medical Society, a word picture of these problems, and the duties, as well as the actions of your board during the past year.

The members, in an effort to perform conscientiously the duties assigned to the board, have repeatedly made personal sacrifice in order to carry out both the spirit and the letter of the Medical Practice Act and to maintain a high standard of medical licensure in fairness to all the citizens of our state, to the medical profession, and to every applicant seeking admission.

One of the problems which has constantly confronted the present and preceding boards has been the matter of licensure of foreign graduates. The first requirement of the board is that a physician be a graduate of a grade-A medical school, and our only source for such information has been the American Medical Association. On May 1, 1947, in response to repeated requests—yes, demands—by members of this society that certain foreign graduates be granted at least a modified license, the following resolution was adopted:

"That certain foreign graduates (four in number) who have applied for licensure are hereby granted the privilege of taking the annual medical examination. If these graduates pass the examination, they will be given a temporary license for a period of one year to practice within the limits of the county in which they reside. During this period of time the North Carolina State Board of Medical Examiners will appeal to and endeavor to procure a grading of foreign schools by the American Medical Association. If the schools from which these applicants are graduated are approved, then they will be given complete license, and if the schools are disapproved, the license will terminate at the end of twelve months."

On May 19, 1947, the secretary wrote a letter to the Council on Medical Education of the American Medical Association requesting that the Council work out a plan for the classification of foreign medical schools, and stating that the North Carolina Board of Medical Examiners was ready and willing to assist the American Medical Association and to meet its proportionate share of expense for a survey of these schools. A Committee on Foreign Credentials has been formulated by the Council on Medical Education of the American Medical Association, and a questionnaire was prepared to be sent out by the State Department to foreign medical schools. No satisfactory information has accrued from this committee.

The matter of licensure for grade-B graduates has been a constant source of difficulty and debate, but this problem is being reduced in frequency as grade-B schools are being permanently closed.

In order to meet the demand and great need for additional medical service in North Carolina, and further in order to be entirely fair to every North

Carolinian who has studied medicine and also to disarm certain factions in the General Assembly who would override the powers of the State Board of Medical Examiners and take the matter of licensure into their own hands, two other experiments have been adopted by your board which we hope, when thoroughly understood, will meet with your approval. The resolutions are as follows:

"That on account of the extreme emergency in state mental institutions, due to the small number of physicians that have been available for service, the North Carolina State Board of Medical Examiners hereby temporarily approves certain physicians recommended by the General Superintendent, Dr. David A. Young, and grants to them temporary, limited licenses to practice within the confines of the said state mental institutions and under the direction and supervision of Superintendent David A. Young for a period of three years."

"That any native North Carolinian graduated from a grade-B or unclassified school prior to 1946, who will serve a rotating internship of not less than two years in hospitals approved by the Board of Medical Examiners, shall be allowed to take the examination for medical licensure in North Carolina. The question of a native North Carolinian is to be decided by the board."

One of the most frequent and painful problems confronting the board is the management of narcotic addiction and irregularities, including other violations of the Harrison Act, by physicians in our state. Last year we told you of the new policy adopted by the board for the management of physicians who were afflicted with narcotic addiction.

At its meeting in January, 1948, the board adopted the following resolution in connection with narcotic cases:

"That the North Carolina Board of Medical Examiners report to the chairman of the State Mental Hygiene and Mental Rehabilitation Committee and the secretary of the State Medical Society in regard to narcotic addicts, particularly those who have been discharged as cured, and that this committee keep under observation these individuals and report quarterly to the State Board of Medical Examiners and the secretary of the State Medical Society on the use of narcotics and allied drugs by said addicts."

We believe this committee, proposed and formulated by our beloved Frank Sharpe, will render a great service to many members of our profession.

On November 6, 1947, the secretary was summoned to testify before a Legislative Commission to Study and Investigate Licensing Boards of the State. A full-dress investigation was entered into by the Committee, and there appeared to be a feeling on the part of the investigators that a layman should be included on the Board of Medical Examiners. It has been suggested that one board be formulated to examine physicians, osteopaths, chiropractors, plumbers, electricians, nurses, and so forth.

The board considered the matter of revocation of license of Dr. W., who was convicted in the Superior Court of Cherokee County for manslaughter, sentenced to the penitentiary and paroled. The secretary made a complete investigation of the case through the office of the Attorney General, and when it was shown that there were extenuating circumstances surrounding the crime, the board took no action upon revocation, the physician having already retired from the practice of medicine on account of ill health.

The case of State vs. Richard C. Baker, osteopath, was finally tried in October, 1947, in the Superior Court of Richmond County. He was convicted for practicing medicine without a license. A fine of

\$100.00 and the costs of court were imposed upon the defendant. An appeal was taken from this judgment, and the case has just been argued before the Supreme Court by the Attorney General and the attorneys for the Medical Society of the State of North Carolina. A decision has not yet been handed down by the Supreme Court, but we believe there are good odds in favor of upholding the verdict of the Superior Court.

One of the most annoying cases that has been before the Board of Medical Examiners in the past decade has been the case of Dr. F., who in 1940 swore in an affidavit before the Board of Medical Examiners that he would not practice medicine in North Carolina. Since that time this physician has not only violated his own sworn oath, but the Medical Practice Act and the confidence of the medical profession. The most disappointing feature of the entire case, however, is the support this illegal practitioner has obtained from various members of this medical society. When the physician, Dr. F., relocated in another district, the Board of Medical Examiners, the councilor, and several other physicians in adjoining counties resolved to produce the evidence and demand prosecution. The Board of Medical Examiners went to extensive trouble to prepare a brief in the case of Dr. F., and presented the same to the Attorney General for his approval. The solicitor was directed by him to proceed in the prosecution. When the case was ready for trial we understand that physicians in the community were persuaded to sign a petition for the solicitor to postpone the same. Your Board of Medical Examiners could not agree with what appeared to be a thoughtless act on the part of physicians, and directed the solicitor to proceed with the trial. Dr. F. pleaded guilty to the charge of practicing medicine without a license and was fined \$50.00 and the costs of the court. Prayer for judgment was continued upon the condition that the defendant not practice medicine in the state until he had been properly licensed.

To summarize, the board has assembled four times in the past twelve months in order to expedite licensure of physicians and on account of the press of business. All members have attended all meetings.

126 applicants licensed through endorsement of credentials.

133 applicants licensed by written examination.

66 applicants took Part I of the written examination.

Two applicants have been refused license for failure to meet the requirements of the board, one being a graduate of a grade-B medical school, the other a graduate of a foreign school. One applicant failed to make a passing grade on Parts I and II of the written examination. One applicant failed to make a passing grade on Part I only of the written examination.

One license was revoked on account of narcotic addiction. At the first hearing judgment was suspended in order to observe the defendant. After he violated the direction of the board, the judgment was placed in effect and his license was canceled.

Six hearings were held on account of narcotic addiction. Three physicians were placed on probation on account of narcotic addiction, and there were two revocations of narcotic license by the Bureau of Narcotics, Treasury Department.

Two investigations were made by the S.B.I. at the request of the Board of Medical Examiners. In one case a layman was practicing medicine, and in the other a physician was practicing medicine without license.

One hearing was held by the Board of Medical Examiners on account of the layman practicing medicine.

The board makes the following recommendations to the Legislative Committee and hopes that these will be adopted by the House of Delegates:

1. Annual registration of all physicians

We can see the following benefits:

a. Greater aid in controlling irregularities

b. Information as to location, type of practice, and death of physicians

c. Aid in follow-up and control in case of revocation of license

d. Elimination of confusion in names and initials

e. Aid in controlling addicts

A total of twenty-eight states, the District of Columbia, Alaska, and Hawaii have annual registration of physicians.

2. Registration of resident physicians

This would help to control physicians coming into the state and remaining for many years within the confines of a hospital, where they are almost always practicing medicine.

3. Registration of interns

This would aid physicians in procuring desirable location and aid communities to find a suitable physician to carry on practice

4. Basic Science Law

5. Institutions of the injunctive process; which gives the judge an opportunity to issue a temporary restraining order, and if there is further violation on the part of the physician, trial is unnecessary.

6. That in case of revocation of license and appeal to the Superior Court, the law be amended so that trial could be held in Wake County.

The Board appeals to each and every councilor to represent the State Medical Society by cooperating fully with the State Board of Medical Examiners in all matters pertaining to licensure and irregularities on the part of physicians.

Respectfully submitted,

MALORY A. PITTMAN, President

IVAN PROCTER, Secretary-Treasurer

... President Robertson appointed Dr. J. G. Raby and Dr. J. Street Brewer as a committee to read this report, consider the recommendations, and present their conclusion at the night meeting.

Report of the North Carolina Board of Nurse Examiners

I am happy to report that we have had a good year examining and licensing nurses.

January 15-16, 1947

200 took the examinations; 190 passed; 84 registered by reciprocity

May 27-28, 1947

110 took the examinations; 104 passed; 63 registered by reciprocity

Sept. 30-Oct. 1, 1947

504 took the examinations; 458 passed; 41 registered by reciprocity

March 24-25, 1948

292 took the examinations (papers have not been graded); 110 accepted by reciprocity

Making a total of 1106 taking examinations, 1050 having received licenses to date, and 298 registered by reciprocity.

As of January 1, 1948, the enlarged Board of Nurse Examiners, which includes the five members of the North Carolina Board of Nurse Examiners for registered nurses and three ladies appointed by the different associations of the practical nurses, had licensed without examination 481, with 882 practical nurses having applied for registration to date, April 19, 1948. Last week I talked with Miss Miriam Daughtry, R.N., secretary and treasurer. I learned that we have a large number of applications to be passed on at our next regular meeting.

As you probably know, it is the new law that all

nurses, both registered and practical, have to re-register each year in order to practice in North Carolina. The last audit showed that 4657 registered professional nurses had re-registered between September 21, 1947 and March 16, 1948. In this way we can tell how many nurses we have in the state.

Respectfully submitted,
LOUTEN R. HEDGPETH, M.D.
Nurse Examiner—North Carolina
Board of Nurse Examiners

Report of Advisory Committee to the Auxiliary

It is my happy privilege to bring you again the annual report of the North Carolina Medical Society's Auxiliary.

Your Auxiliary has had a very active and effective year under the capable and charming leadership of Mrs. Reece Berryhill of Chapel Hill.

The usual executive meetings have been held throughout this year, and much interest has been shown and many intelligent discussions have been held on the following problems.

1. Public relations

Public relations between the medical profession and the public; the medical profession and other medical personnel including hospital administrators, technical workers, trained nurses and practical nurses. Much of this work has been done by each member of the Auxiliary considering herself a liaison officer between the medical profession and the above mentioned medical personnel.

2. Recruitment of student nurses

The Auxiliary, cooperating with the State Nurses Association and the North Carolina Hospital Care Association, has done much towards making the tour of Miss Student Nurse of North Carolina a success. In each community to which Miss Student Nurse has gone the Auxiliary has acted as hostess at teas to which all prospective student nurses were invited, and has assumed the responsibility for making entrees for her into the various high schools. The Auxiliary feels that this work has been very effective in that the number of girls entering nursing training in North Carolina has greatly increased. The wholesome success of the program is also borne out by the scrapbook containing many newspaper articles and pictures belonging to the North Carolina Hospital Care Association.

Not only has the Auxiliary been interested in soliciting student nurses but it is very conscious of the economic problems that exist for nurses who are now in training in hospitals which make no financial remuneration to the students. Your Auxiliary, as well as you, knows that it is impossible for young people preparing themselves for a life profession to live by food and shelter alone. To do something about this, it has been suggested in your Auxiliary that the Auxiliary as a whole or in its separate units create one or more student loan funds for student nurses. These various groups have also decided to pool from their own wardrobes and the wardrobes of their various friends street and evening clothes, and if the State Nurses Association will cooperate, to pool these in the nurses' office in Raleigh and have them cleaned and renovated and from there have them distributed through the various hospitals to those nurses who may need them. It is the hope of those interested in this program that this will relieve some of the difficulties of the student nurses. I am happy to say that this movement began in the Kinston Auxiliary at the suggestion of Mrs. Oscar Cranz, and under the capable leadership of Mrs. Glenn Tyndall.

3. Membership and organization

During the year just past your Auxiliary has

made an effort to organize an auxiliary in every county medical society in the state. It is not 100 per cent organized as yet, but the number of associations increased during the past year. The membership of the Auxiliary at this reporting is 1157 paid members.

4. Other activities

It is probably needless to remind you, but we feel it is well that you keep in mind that in addition to the above work, the Auxiliary carries on the following activities and does so by the use of membership dues and money raised in different ways by the various auxiliaries.

1. The McCain Bed at Sanatorium for a member of the medical profession or other medical personnel.

2. The Stevens Bed in the Western North Carolina Sanatorium for a member of the medical profession or other medical personnel.

3. The Cooper Bed in the Eastern North Carolina Sanatorium for a member of the medical profession or other medical personnel. (All of these beds have been occupied by members of the medical profession or other medical personnel during the past year.)

4. Student loan fund that is available for any deserving young person needing help to complete his or her medical education.

Your Auxiliary is happy to make this report and is awaiting directions from you to chart its course for its next year's work.

Respectfully submitted,
RACHEL D. DAVIS, M.D.

Report of the Committee on Hospitals

The immediate major concern of North Carolina hospitals is financial. Operating costs during the war years were fairly well stabilized by rationing and control of prices. Somewhat more than a year ago, when these factors were removed, costs began to climb rapidly. Four items are involved primarily: food, supplies, salaries and services, just as they are in our homes. Any housewife is confronted with the difficulty when she shops, pays domestic help, or gets a plumber or electrician to repair some household gadget. In order to acquaint the public with the necessity of increased hospital charges and other problems of hospitals, the North Carolina Hospital Association has embarked upon an extensive program of public relations.

The nurse shortage is not as acute as it was a year or so ago, although this varies from one place to another throughout the state. Those hospitals conducting training schools have felt the beneficial effect of the campaign carried on last year and this year for the recruitment of student nurses. Credit for this is due the council on public education of the North Carolina Hospital Association, with the able assistance of the public relations department of the Hospital Saving Association and the State Nurse Association and League for Nurse Education.

A trend in professional nurse education is toward an increase in the use of universities, particularly those with medical schools and teaching hospitals. In general it would seem that if the cultural subjects and other subjects which do not require hospital facilities for instruction purpose were taught in the public school system before the period of hospital teaching began, the hospitals would be greatly relieved. The question has not been settled as to the proper source of meeting the expense of nurse education. At present it falls largely upon the hospital, and hence upon the patient. It would seem that proper sources of revenue to conduct training schools would include on the one hand state subsidy through the department of public education, and on the other, tuition fees from student nurses themselves, with liberal use of scholarships, student

loans, and other inducements.

More **nurse service** per patient is required than ever before. This is due partly to various new methods of treatment, such as the extensive use of penicillin and the sulfonamide drugs, early ambulation, oxygen therapy, transfusions, infusions, and so forth. Also, in most places the eight-hour schedule of duty is in effect; this has of course increased the number of nurses required.

In the program for improving the economic status of nurses, there have been some instances of friction between hospital management and organized nursing. The State Nurses' Association has failed to secure recognition as bargaining agent for institutional nurse members. However, partly through the Association's influence, and partly because of recognition of fairness to the nurse profession, most of the requests of the nurses for better working conditions have been granted. In spite of the increased demand for and greater variety of service, and a period of change in working conditions, there is a distinct improvement in nursing service in the state.

The program of **practical nurse training** is yet in its infancy. A few schools have been started or are contemplated. In this field we are carefully finding our way. The prospect is good for a greater supply of efficient basic bedside nursing from this source, as more of the professional nurses devote themselves to acutely or severely ill patients, to teaching, supervising, public health, and other branches of specialized nursing.

Hospital construction has not yet assumed a rapid pace. There have been some additions to established institutions. For the large part, new construction, especially in rural and less thickly populated centers, awaits the further activation of the North Carolina Hospital and Medical Care Program. We are proud of the fact that, of all the states, because of the foresight of leaders in medicine and statesmanship, North Carolina recently became the first state to receive a check under the Hill-Burton act for hospital construction.

In this connection we are beginning to learn that some of the poorer counties which have the highest priority for grants under the Hill-Burton act and are therefore entitled to receive about 80 per cent of the cost of construction from federal and state funds, cannot raise even their meager 20 per cent locally. It is to be regretted that these localities, most in need of hospitals or community clinics, will thus forego the opportunity. It is to be acknowledged that even if hospitals or clinics are constructed in such areas, it will be difficult locally to raise the necessary funds to keep them in operation. Funds to which these regions are rightfully entitled will therefore go to localities of lower priority, and at least to some extent hospital facilities and medical services will continue to be more concentrated in areas of greater wealth and population.

It is not always as much an impossibility on the part of a so-called poorer area to put up its small proportion of cash to erect a hospital and conduct it, as it is a lack of appreciation of the value of a hospital to such a community. Once that public becomes accustomed to hospital and medical service, it is most likely never again to be without such service. Our Society's Committee on Rural Health Education has an extensive and well planned program to arouse in such communities an interest in hospital and medical care, prepaid voluntary insurance, and all matters promoting better health.

Most of us are familiar with isolated examples of major hospital construction, such as the Moses H. Cone Memorial Hospital in Greensboro, the Western North Carolina Hospital at Asheville, and the teaching hospital at Chapel Hill.

It is the desire of this committee to focus the attention of the members of this Society upon the fact that in our time **the very character and pattern of medical practice in large measure is determined in hospitals.** Present-day graduates can hardly set about their work without available hospital facilities. This dependence upon hospitals demands greater interest on the part of every one of us in the problems of hospital organization and management. Your committee called the attention of the Society to this in its 1947 report. Little if any increase in interest has been shown thus far. It is true that the North Carolina Hospital Association was organized and, for a number of years, conducted by medical men with the cooperation of nurses. With the passing of hospital ownership and control from doctors to lay board members in most instances, doctors largely have withdrawn their interest in the hospital association and in problems relating to hospitals and nurse education. This interest must be revived.

Many of you received a Bulletin of the Southern Medical Association on the "**Relationship Between Physicians and Hospitals.**" This Bulletin gives a report of "a committee to study the problem of the growing trend of hospitals to encroach upon, enter into, and take over the practice of medicine, a problem comparing in seriousness second only to socialized medicine." Further quotations from this report, which was approved by the Southern Medical Association in November, 1947, are as follows:

"Many hospitals have taken over pathology, laboratory work, anesthesia, diagnostic x-ray work, and in some instances x-ray therapy, collecting directly from the patients and paying the pathologist, radiologist, or anesthesiologist on a percentage basis or salary . . .

"Many teaching hospitals connected with large medical schools are paying their teaching staffs, usually outstanding physicians, on a salary basis, collecting their fees and paying the excess into hospital or school deficits . . .

"The state and national hospital associations have been very active. They are attended less and less by physicians and there have been increasing discussions of medical matters, and in few instances scientific papers have been presented. It is the feeling of many hospital managers (who are paid on a salary basis) that the physician is receiving too much and should be placed also on a salary basis."

Among the possible procedures "in opposing this dangerous trend" are suggested: (1) obtaining information "concerning this trend in communities, and state laws regulating the practice of medicine"; (2) "influence the American Medical Association to require for hospital recognition that the hospitals do not practice medicine; (3) "that the American Medical Association appoint a special committee in each state . . . to appraise and prepare a report of the physician, hospital and medical school relationship in their respective states."

The Bulletin further states that the Board of Trustees of the American Medical Association presented a brief report on Hospitals and the Practice of Medicine to its House of Delegates at the Interim Session at Cleveland, January 5-9, 1948. This report affirms that the practice of medicine by hospitals has been a moot subject for many years and that a great deal of further study and experimentation must be had to work out a satisfactory solution to this vexing problem. It lists several conditions upon which the medical profession should insist as related to the specialties of pathology, radiology, anesthesiology and physiotherapy, which should in large measure be under the jurisdiction of the medical board of each hospital.

This information points to the necessity in each hospital for its medical staff to be well organized. Through its medical advisory board the staff should make its wishes clearly known to the governing authority of the hospital. Such activity is standard procedure of hospital organization and management. In properly conducted institutions it is almost unheard of for the professional staff to be denied its needs and privileges. After all, the doctor's first interest in the hospital is the best possible environment for the diagnosis, treatment and recovery of his patient at the least possible cost. Almost as important is the training of future doctors, nurses and technicians. To these ends all the facilities and personnel of the institution should be devoted.

Concluding this report, your committee on hospitals recommends:

1. That the Executive Committee of this Society be kept regularly informed, not only through these annual reports, but all through each year by its Committee on Hospitals, of all important matters pertaining to hospitals.
2. That the Executive Committee of the Society establish some means of getting in direct contact, whenever occasion arises, with the medical staff of each hospital in North Carolina.
3. That hospital staffs as such be kept informed by direct communication of all important matters pertaining to the relationship between physicians, hospitals, and medical schools; to the trend of hospitals to enter into the practice of medicine; and to hospital competition with private practice.
4. That each medical staff be requested to appoint from its membership one representative whose duty it is to attend hospital association meetings year after year, keeping abreast of the work of hospital associations, and reporting all important developments to his medical staff.
5. That our Society get in behind the effort to merge the two Blue Cross plans in accordance with the opinions of the Blue Cross Commission, the American Hospital Association, and the American Medical Association. Delay is hampering our progress. Unity of Blue Cross and Blue Shield and promotion of this voluntary method of prepayment is the best defense against the government's taking over hospitals and medical service.

The cry for government-controlled medicine will continue either until we have it or until medical men and voluntary hospitals meet the problem. The average physician is still far from awakening to his responsibility in public relations and medical care. We are not making enough progress. But here in North Carolina we have made a fine beginning, and the eyes of the nation are upon us. Our program, with the leadership of the profession, the help of the Medical Care Commission, supported by our citizens through the North Carolina Good Health Association, gives medicine as a free enterprise and voluntary system, its best hope of success.

Respectfully submitted,
P. G. FOX, M.D.
R. D. KORNEGAY, M.D.
HARRY L. JOHNSON, M.D.
HARRY L. BROCKMANN, M.D.
FRED C. HUBBARD, Chairman

Report of the Advisory Committee to the North Carolina Medical Care Commission

Dr. Harry L. Brockmann (High Point), Chairman: There has been no occasion for a meeting of the Advisory Committee to the Medical Care Commission during the last year.

We recommend that a committee of this kind be continued, because the work of the Commission is just getting well started and undoubtedly there will

be necessity for communication between the Commission and the Medical Society of the State of North Carolina all the time.

Report of the Committee on Mental Hygiene

In an organization meeting of the Executive Committee of the State Medical Society, held in Greensboro on May 25, 1947, the Mental Hygiene Committee was asked to take over and combine with its present functions the additional duty of the Doctors' Rehabilitation Committee. This we are glad to do. Our first meeting was held in Raleigh on December 14, 1947. Dr. David Young received the Executive Committee's permission for the Mental Hygiene Committee to promote meetings at local, district, and state levels for the discussion of topics proposed for ultimate discussion at the International Congress of Mental Hygiene to be held in London in August, 1948. Nine hundred letters went out to Parent-Teacher Associations over the state, and a similar meeting was held by each group during the month of April. These findings have been consolidated and sent to London.

Each Councilor has been written a letter from the Mental Hygiene and Rehabilitation Committee offering our services to any unfortunate doctors in his district who are narcotic victims. There were no cases presented by the Councilors, although most of them did not bother to answer the letter.

A similar letter was written to the president of the Board of Medical Examiners, and their response was most cordial. We now have a very pleasant relationship with them. They report to us any indiscretion on the part of doctors coming to their attention, and have turned over their files to us of the doctors who are known addicts to narcotics. We have been keeping a check on these men and make a quarterly report to the Examining Board as requested by them.

We have also made arrangements with two of our best hospitals in the state and with two outside of the state whereby these unfortunate men can be admitted immediately and quietly. If able to do so, they will be allowed to do some refresher work on the ward while they themselves are under treatment.

This Committee requests that a fund be created by the Medical Society for the assistance of physicians who are unable to defray the cost of treatment, and that rules governing the expenditure of this fund (probably \$500.00) be established.

This Committee also strongly urges the State Medical Society Insurance Committee to approach the Blue Cross and other insurance companies in regard to hospitalization for psychoneurotic patients, since these patients are just as ill as other patients and should not be discriminated against.

We also recommend to the Medical Care Commission that two psychiatric beds be available at all times for acute emergencies in every hospital that is being built, or added to, through funds from the Hill-Burton Bill or Medical Care Commission, and that all general hospitals set aside 2 beds for acute psychiatric cases, and that the hospitals be urged to accept these cases.

In the preventive aspects of the mental hygiene regarding doctors, consideration of some rather general measures should be made as a means of encouraging fellowship and mutual assistance among the doctors by larger attendance at meetings, and in order to give more meaning to membership in the Society, a review be made of the requirements of members to remain in good standing with intention of placing less emphasis solely on prompt payment of dues and more emphasis on manifest interest in Society activities.

Suggestions:

- A. (1) When a member is twelve months in arrears in his dues, this should be referred to the County Board of Censors, which shall report to the secretary of the State Society as to whether adequate cause for this exists, and additional time may be allowed for the payment of dues in arrears.
- (2) Requirement of at least 25 per cent minimal attendance at the regular county meetings, and that failure to attend be accompanied by a statement of the local county Board of Censors that reason for non-attendance was satisfactory.
- B. (1) That to all new members, and to old members annually or as often as decided by the Executive Committee, the secretary of the State Society shall write, both calling attention to the special dignity, prestige and responsibility of the doctor in his work and in the community, and the precarious position in which he is placed, and offering him assistance in his carrying out his work, and telling him that the Mental Hygiene and Rehabilitation Committee and his local Board of Censors are ready to help him if called upon, and to all new members a copy of ethics and of laws relating to medical practice. When the Board of Censors is thus asked to help, it shall act as the local representative of the Mental Hygiene Committee, and in conjunction with it, for the purpose of protecting the doctor's interests and good name and of helping him back to good health and full efficiency, and of keeping the matter on a strictly confidential basis. When the County Board of Censors is consulted, it may get further assistance if needed from the Mental Hygiene Committee or from the District Councilor.
- (2) That in accord with the foregoing, the County Board of Censors take over an additional function, slightly different from their present one, to act as a local representative for this Mental Hygiene Committee and act in a protective, helpful and confidential capacity.
- (3) That the Mental Hygiene Committee proceed to make psychiatric or mental health facilities available for physicians locally and outside the state through cooperation of the medical schools.

A. B. CHOATE, M.D., Chairman

Report of the Committee on Tuberculosis

While all of us miss the guiding genius of the pioneer in tuberculosis work, both in state and nation, Dr. P. P. McCain, nevertheless, his spirit carries on.

The workers who have followed in his footsteps in the field of tuberculosis, general medicine, and public health are doing a very, very creditable piece of work, and much has been done in the fight against tuberculosis, especially during the past eighteen months since his death. The following remarks will give you an insight as to results of the state tuberculosis work:

We will first mention the result of the Christmas Seal Sale for the year of 1947: Due to the untiring work of the managing director of the North Carolina Tuberculosis Association, Mr. Frank Webster, and his assistants, both in the central office at Raleigh and the enthusiastic support and effort of each local group in the respective counties, the official Seal Sale totaled \$367,414.54. This represents a gain

of \$34,328.53, or approximately 10 per cent more than the 1946 total. The above figures are representative of just what is being accomplished in this very necessary work.

At long last, the State Legislature, especially the Appropriation Committee and the Budget Bureau, have become more sympathetic, and at the last meeting of the Legislature appropriated more money—not only for maintaining the present sanatoria, but also for the addition of more badly needed beds for the care of tuberculous patients. The above agencies also appropriated money for the purchase of streptomycin, to be used in the actual treatment of patients in the three state sanatoria, to the amount of \$30,000.

Various counties are also supporting their sanatoria in a very creditable manner, certainly as generously as the state. Thus, these institutions, under very efficient and far-seeing leadership, are making rapid advances, both in the treatment and in the prevention of the disease in its various forms and manifestations. Streptomycin is also being used extensively in these institutions.

I might say that the largest streptomycin clinical research and study unit in tuberculosis is at the Veterans Administration Hospital, at Oteen, North Carolina. This study was begun in the late spring of 1946, and is being carried on in increasing volume to the present time. During this study, good therapeutic results have been obtained in certain types of tuberculous lesions. Also, much information, both of a positive as well as of a negative sort, has been accumulated. Approximately 400 cases of various types of tuberculosis have been treated.

Much clinical research is also being carried out by Dr. Henry S. Willis, Superintendent of the North Carolina Sanatoria, and his associates.

All the information that will be obtained by these study units will be available as a guide to future work.

A course in thoracic diseases was conducted March 22-27, 1948. This was sponsored and supported by the American Trudeau Society, in cooperation with the Duke University School of Medicine and the University of North Carolina School of Medicine, and was a great success. The attendance was much greater than anticipated. The various papers, addresses, and clinics were well above the average, as would be expected, because the participants were carefully selected by the very able committee, of which Dr. H. S. Willis was chairman. All speakers were outstanding in their respective fields.

Mass chest x-raying of the general population of the state, under the auspices of the U. S. Public Health Service, through the N. C. State Board of Health, and by the use of local county equipment, is proceeding in a satisfactory manner. In all, approximately 300,000 persons have been x-rayed in the past two years. Many early and curable cases of tuberculosis are being detected, and thus given a chance of getting their diseases under control, as well as preventing the spread of the disease to others.

S. M. BITTINGER, M.D.,
Chairman
H. S. WILLIS, M.D.
C. D. THOMAS, M.D.
M. D. BONNER, M.D.
H. F. EASOM, M.D.
HILLIS L. SEAY, M.D.

Report of the Committee on Scientific Work

Dr. Roscoe D. McMillan (Red Springs), Chairman: The Committee on Scientific Work has made every effort to put together a program which will present what medicine needs today. I hope that all

of you will visit the scientific exhibits.

Report of the Historical Commission

Dr. K. P. B. Bonner (Morehead City), Chairman: This Commission came into being as a result of a recommendation made by President Vernon four years ago. The Commission originally appointed consisted of eleven members. Last year there was a revamping of the Commission, and the number of members was reduced to nine. As now constituted, it consists of three ex-presidents, four members of the faculties of the three medical schools in the state, and two plain, ordinary members. During the four years of its existence, in one year of which the Society did not hold a meeting, there have been four meetings called, each of which I attended. At the first meeting there were three members of the group present; at the second meeting, two; at the third meeting, two; and at the last meeting, two. The fact is inescapable that with so large a body, consisting of men whose affairs are pressing and important, it is almost if not quite impossible to secure a quorum. Consequently it would appear, in the light of actual experience, that it would be well to reduce the size of that group and make it a working group, so that something can be accomplished towards the compilation of a history of medical affairs in the state. Time passes, and human recollection is fallible, and records of many past happenings after a time will be unobtainable. The sooner a start is made the better it will be.

I therefore recommend to this Society that this Commission be discharged and that a smaller group be appointed, so that it will be possible to hold meetings and to begin the preparation of the history of medicine in North Carolina.

Report of the Committee to Cooperate with the National Physicians Committee

Your committee has maintained constant contact with the National Physicians Committee in the endeavor to keep informed on the constantly changing maneuvers in the national capitol. We remain impressed with the high character of the work done by the National Physicians Committee. We are of the opinion that in fighting the Wagner-Murray-Dingell bill and subsequent versions of this dangerous piece of legislation the National Physicians Committee has done more than any other group to preserve freedom of medical practice in this country, and with it to preserve the liberties, the freedoms, and the incentives of our American way of life.

It is well to remember that although we have won a notable battle in the continuing war for democracy there will be no let-up in the attacks of the Communists, the fellow-travelers, certain groups of misguided "do-gooders," and last and perhaps most important that group of bureaucrats entrenched in the social security set-up in Washington who are endeavoring constantly to increase the tentacles of their power through the imposition on this country of a system of state-controlled and politically dominated medical care.

Constant vigilance, perseverance, much work, broad planning, and financial support will be necessary to preserve our freedoms.

A. L. DAUGHTRIDGE, M.D.

G. W. MURPHY, M.D.

GEO. L. CARRINGTON, M.D.,
Chairman

The reports of the Committee to Cooperate with the North Carolina Dental Society and the Committee on Venereal Disease Control were called for, but no reports were given.

Report of the Physician Members of the North Carolina Medical Care Commission

In a consideration of the program of the North Carolina Medical Care Commission, it might be well to review briefly the history of the Commission. Most of you recall that the State Society initiated the movement which led to the development of the Medical Care Commission and the program designed to provide for the people of the state extended hospital facilities and better medical and health services. In 1943, on the advice of leaders in the State Medical Society, Governor Broughton named sixty members to form the North Carolina Hospital and Medical Care Commission, later known as the Poe Commission. Fifteen members of this commission were members of the State Medical Society. Surveys were made and plans formulated and legislation drafted to be presented to the 1945 Legislature. The measure was passed by the Legislature and became law on March 21, 1945. One of the provisions of this law was the establishment of the Medical Care Commission, which is composed of twenty members representing the chief interests of the state. Five of the members belong to our State Medical Society. Other provisions of this bill, which is known as H. B. 594, provide for and give the Commission authority to administer all state and federal funds that may be available for the building and equipment of hospitals in the state. It provided the Commission with a fund of \$500,000 with which to contribute \$1.00 per day toward hospitalization of indigents in approved hospitals who are certified by county superintendents of welfare. It provided a loan fund of \$50,000 for students of medicine, and later in 1947 for students of dentistry, pharmacy, and nursing, who upon completing their training, will agree to practice at least four years in rural communities of 2,500 or less. The law also charged the Commission with encouraging the development of a more adequate supply of doctors, nurses and medical technicians, and their distribution so as to serve the rural population. The Commission was also charged with encouraging the extension of Blue Cross prepaid hospital and medical care insurance. It was also authorized to encourage the education of more Negro doctors.

The 1945 General Assembly required the Commission also to make two special surveys. The first survey to be made was that of the existing hospital facilities of the state as a basis for the development of a state-wide plan for the building, where needed, of new hospitals and the expansion of existing ones. This survey was completed during the first six months of 1946. The second survey was a study to determine the needs of expanding the University Medical School to a standard four-year school, the building of a teaching hospital of at least 400 beds, and to recommend the location of this school and hospital. This survey was made also during 1946 by a group of seven men from out of the state and who are national authorities. The recommendations of this committee were adopted in August, 1946, by the Commission, and soon after this its recommendations were made to the Governor and the Board of Trustees of the University. The General Assembly of 1947 approved the plan as recommended by the Commission, and made the necessary appropriations to the University.

The Hill-Burton Bill, public law 725, was enacted by Congress in August, 1946. It provides federal grants-in-aid to the states of \$75,000,000 a year for a five-year period—or a total of \$375,000,000 for the five-year period—to be used in financing one-third of the cost of approved hospital projects. The state and local authorities are required to provide

Table 1

	No. Hospitals	No. New Beds	Total	U. S.	State	Local
Hospitals and Clinics	11	685	\$ 7,743,115	\$2,581,038	\$3,105,406	\$2,056,671
State Mental Hospitals	6 ⁽¹⁾	487	1,500,000	500,000	1,000,000 ⁽²⁾	0
State TB Hospitals	3	130	600,000	200,000	400,000 ⁽³⁾	0
State Cerebral Palsy Hospital.....	1	40	450,000	150,000	300,000	0
Total	21	1,342	\$10,293,115	\$3,431,038	\$4,805,406	\$2,056,671

(1) 5 units at Goldsboro; 1 unit at Morganton

(2) Actual state credits—\$868,267

(3) Actual state credits—\$294,295

the remaining two-thirds of the cost. The plan, therefore, contemplates the expenditure during the five-year period in the United States of approximately \$1,125,000,000.

The federal funds are allocated to the states on the basis of their needs. Under this plan North Carolina is allocated \$3,431,550 annually, or a total of \$17,000,000 in five years. This approximates about one dollar per capita on the required mid-war population estimate as of November, 1943; whereas, a number of states receive less than 25 cents per capita. The federal law requires that in the building of hospitals and in the expansion of hospitals there be no discrimination against groups because of race, color, or creed; and that valid guarantees against deficits for a period of two years be provided in the operation of aided hospitals.

The federal law is administered by the United States Public Health Service, Hospital Facilities Division. This agency, under the federal law, has drawn up rules and regulations regarding the financial aid toward hospital construction. It requires that each state hospital agency make a survey of existing hospital resources and needs of the state and develop a state-wide plan for hospitals that will meet the federal requirements. It has established also construction standards for all essential departments and areas of hospitals, and federal aid will not be allowed for projects that fall below the stipulated federal standards. Technical personnel of the federal government is to cooperate with state personnel upon plans and specifications for hospitals. This personnel includes hospital administrators, hospital architects, construction engineers, and so forth.

The North Carolina state plan was approved by the U. S. Public Health Service in 1947. It was one of the two first plans approved.

The General Assembly in 1947 enacted a hospital licensing law to be administered by the Commission which is mandatory for those hospitals that receive state and federal aid, and is optional for others. There was also adopted an Enabling Act which permits the state, counties, cities and towns, separately or jointly, to raise funds for building, equipping, maintaining and operating hospitals. Both publicly owned and non-profit hospitals are eligible for the Commission's aid.

The survey of the state's hospital resources made by the Commission in 1945 showed that, exclusive of nine state-owned hospitals, 67 out of 100 counties of the state had some hospital facilities. Thirty-three counties were found to have no hospital facilities whatever. On the whole these counties were small in area, population and financial resources. Their tax rates, in general, were high and their bonded indebtedness high. These counties of course in the main are unable to finance their part of hospital construction, even though it is less than 20 per cent of the total in some cases. Furthermore, they are probably unable to make up deficits which they probably would incur during the first two years of operation.

The funds provided by the state are worked out on an equalization basis so that some of the richer

counties get as low as 10 per cent of the total cost of construction while some of the poorer counties get as much as 50 per cent of the total cost. In the general hospitals in North Carolina there are about 9,346 beds. This is about 2.7 per thousand of population. The goal set by the U. S. Public Health Service calls for an average ratio for the state of 4.5 per thousand, or a total of 15,003 beds. The three state mental hospitals were designed to accommodate 8,013 patients. Other private mental hospitals will accommodate about 265 patients. Combined, the mental beds give a ratio of 2.4 beds per 1,000 population, whereas the national goal is 5.0 per 1,000. Under the present program there will be an increase in the ratio of the state for mental patients to 4.0 per thousand.

In the fall of 1946 the Commission figured that the cost of all hospital construction, including nurses' homes—would cost \$7,000 per bed, and the State Legislature granted the amount requested—\$6,250,000—for the biennium that began in 1947. The cost of construction has increased so that at the present the estimate of the U. S. Public Health Service placed it at from \$12,000 to \$15,000 per bed exclusive of nurses' homes. In order to hold cost down, the Medical Care Commission adopted almost minimum standards approved by the Public Health Service, and the encumbrance figure for standard hospitals was placed at \$12,000 per bed, and \$8,000 for clinics having one story, no basement, no elevator, and less expensive equipment and construction. The entire allocation of federal funds to the state for the current year up to April had been encumbered with the exception of less than \$1,000. The total allocations are shown in table 1.

To date there have been eleven county elections on bond issues in the state amounting to over three and a half million dollars. Nine of the eleven have been successful; two failed. The commission has information tending to show that more than 50 hospitals are planning to build an addition to their facilities and more than \$10,000,000 is available or pledged in support of applications for state and federal aid.

Ninety-four sites for 79 hospitals in 61 counties have been inspected and 74 approved for new construction or expansion of existing hospitals. The site inspection committee included a hospital administrator, architectural, and engineering personnel from the Commission and from the U. S. Public Health Service, and a sanitary engineer from the State Board of Health. The inspections relate to central location of site, transportation facilities, elevation, drainage, soil formation, and especially to adequate water, sewerage, and electric facilities.

The future of the Medical Care Commission for the extension of hospital and medical facilities in the state of North Carolina on the whole looks bright. There are many problems, however, to solve and hurdles to make before we can be on a sound footing. Problems of maintenance, ability of poorer communities to share in the program of construction, the size of the facility the community needs, and how to solve the problems of manning these facil-

ities with doctors, nurses, and technicians are still pressing. I have a feeling, however, that the people in these communities will rally to the support and respond to the needs of these facilities once they have them and realize the real benefits derived therefrom.

We are glad to report that the plans for expansion of the medical school at Chapel Hill are proceeding satisfactorily. A year ago a committee was appointed from the board of trustees of the University to work with the administration in evolving plans for the construction. This committee is composed of seven outstanding citizens of the state. Reports from Chapel Hill indicate that the architect's plans are well advanced and that construction is expected to begin late this year.

J. STREET BREWER, M.D.
FRED C. HUBBARD, M.D.,
Chairman

Report of the Committee on Rural Health Education

The Committee on Rural Health Education of the American Medical Association was conceived in 1946. It was felt by the Association that an active program through which the rural areas of our country could obtain better and extended hospital services should be launched. It was clear that a program of education for the medical profession as well as the civilian population in matters pertaining to better health was needed. The fact that rapid changes in social, economic and scientific advancement were taking place in this country made it all the more apparent that such a program was needed. As a result a national committee was appointed and organized medicine in general responded to the movement.

The first national health conference was held in Chicago early in 1946; a second was held in Chicago in 1947. The third nationally held conference was held in Chicago also in February, 1948. It was my privilege and pleasure as the chairman of your committee to attend this meeting. Representatives from all the principal organizations in the United States attended and took active parts in the program at this meeting. The following committees made interesting and revealing reports:

- 1) Committee on hospital facilities and health centers.
- 2) Methods of bringing and holding physicians and dentists in rural areas.
- 3) Volunteer medical prepayment plans.
- 4) Nursing needs of our rural communities.
- 5) Health councils as agencies for promoting rural health.
- 6) Medical care for lower income groups.

The discussion centered mostly around the questions of actual needs for improved medical and hospital care in rural areas, and what is being done towards improving those conditions. Many other questions were discussed relating to rural health. Economic and social problems bearing on ways and means of obtaining rural area hospitals, community clinics, better churches, better schools, better roads, and other matters which would have a direct bearing in attracting doctors and nurses to these rural areas were discussed. The proper education of the public and its social responsibility in providing better opportunities for increased medical and hospital facilities were discussed at length. The matter of attracting rural school boys and girls through vocational guidance courses to consider medical and nursing education was included in these discussions.

The matter of Blue Cross prepaid insurance in relationship to better medical and hospital care was given prime importance in the program of the National Health Conference. Ways and means of

promoting the spread of Blue Cross insurance and getting it into the hands of the farm people and the lower income groups were considered at length. It was recommended that voluntary non-profit prepayment medical care plans be developed on a state-wide basis predicated against local needs, and this was based on the experience of some 85 medical society sponsored plans and some 87 Blue Cross plans throughout the country.

The matter of nursing needs in rural communities and how to correct this through the program of increased facilities and expansion of home nursing courses in hospital schools had a very prominent part in the discussion. It was felt that this not only helps individuals to help themselves in time of need but is a valuable means of recruiting students for schools of nursing. Courses for practical nurses who are properly trained and licensed for the protection of the patient was urged. Improved status of nurses in rural communities in regard to working conditions, professional recognition, opportunity for advancement, and increased income was considered.

The health council as an agency for promoting rural health was discussed at length. It was the concept of the committee that health councils should be composed of representatives from three groups:

- 1) Those allied and auxiliary professional groups who render health service.
- 2) Those who receive health services.
- 3) Those government agencies officially concerned with health and medical care and also including those voluntary agencies manifesting a continuing interest in health and medical care.

It was decided that the objectives of the health council would be:

- 1) To bring together medical and allied professional and citizen clubs to the end that discussion, debate, and interchanging of opinions and planning of health and medical care may be effected.
- 2) To encourage, stimulate, foster and support the establishment of medical and health councils in areas where deemed advisable within each state.

The function of the health council was to be:

- 1) A survey of medical care and health needs.
- 2) To determine the existing and needed facilities and personnel for meeting the findings of the survey.
- 3) Recommending ways and means of providing adequate facilities and personnel for meeting the constantly changing needs.
- 4) To disseminate as widely as possible information pertaining to health and medical care problems and programs.
- 5) To conduct or promote such meetings as may be helpful in effectuating the program.

More than 500 persons attended the third annual rural health conference mentioned above. The conference had leaders in child health and welfare work throughout the country, and representatives of many farm groups and members of the medical profession. Improving the health services for the rural child was the theme of the meeting. Perhaps the phase of the program which attracted greatest interest was the discussion carried on by four farm youths concerning better health for America's six million farm families. Each of these youths appeared before the microphone in the big hall in Chicago's Palmer House and gave his views on "Rural Youth Looks to Health." The discussion of the problem was certainly an eye-opener, and perhaps lent more weight to the argument in favor of better rural hospital and health facilities than any other part of the program.

On October 8, 1947, I attended the Southeastern Regional Conference on Rural Health, which was

held in Atlanta, Georgia. Here again was a record attendance and a broad discussion of the problems of rural health by leaders from all the principal farm groups, welfare groups, the medical profession, U. S. Public Health Service and other important national leaders. This conference included all of the Southeastern states.

In 1947 the Committee on Rural Health Education of the North Carolina Medical Society was appointed. This committee consists of Dr. Reece Berryhill, Dr. M. D. Hill, and myself. We realized very soon that this program was a very important one, a program with great potentialities for far-reaching effects, and one which would of necessity be slow in gaining momentum. The A.M.A. plan in general calls for a state council representing all groups that would be interested in a public health movement. This council would be responsible for policies and programs in the state in a general way. The next step in the formation of the state program was plans for a State Health Conference. This was arranged and was held in Chapel Hill on February 27 of this year. There was a large attendance representing many of the voluntary agencies of the state, the Medical Society, and the State Health Department as well as other state departments. The program as presented consisted of speakers from in the state and out and who had wide reputations in their respective fields. The entire program consisted of discussion bearing directly or indirectly on the extension of public health.

Your committee on public health now is in the process of establishing Rural Health Councils. It was decided best to follow out the plan of initiating the program in the different counties with the local medical society spearheading the movement. In as much as the State Health Department is a baby of the State Society and has done much in the past years to break the ground for rural health advancement, we are asking them to go right along with us in the establishment of Rural Health Councils. This they have consented very willingly and enthusiastically to do. It was decided to try the plan out in five or six widely dispersed counties which have public health departments and health educators. The presidents and secretaries of these counties are being asked to cooperate with the health department officers and the health educators in deciding upon the needs for a Rural Health Council. After their conference, if it is decided a council is needed, they will define their objectives and arrange a definite program. Then the leaders in agricultural organizations, welfare departments, civic organizations, ministerial organizations, school representatives and individuals who are interested in such a program will be called in and plans and objectives set forth and the organization of a local health council effected.

I want to give due credit to the N. C. Good Health Association and particularly its executive secretary, Mr. H. C. Cranford, for the splendid cooperation and work they have given in conjunction with the Rural Health Program. This organization was asked to promote the program, and has done a wonderful job, particularly in connection with the rural health conference and in promoting the program. We expect the continued cooperation of the Good Health Association and feel that its interest will be greatly needed in bringing the program to a successful stage.

It is obvious that a program such as this will necessitate the cooperation of all the state and voluntary agencies in North Carolina. It is also clear that it will be a long drawn out program, requiring perhaps two or more years to get well under way and to become effective. Never before in the history of our country have people been so public-health

conscious. As a result, I believe, there is a tendency to overlap and of overorganizing of programs relating to extension of medical and hospital services to the rural public. Just at the present, there are at least three or four organizations in the state which have pretty much the same objectives in this direction. It is my hope that as the programs of these different organizations develop, it will be possible to combine our efforts and in that way have more concentrated effort and better results.

In general I think it can be said that the concept of medical practice has changed markedly during the last few years. No longer is it enough to say that the whirlwind and dramatic rescue of a patient on the part of a doctor or a group of doctors is sufficient justification for our existence as a fraternity. Preventive medicine and a frank presentation of the facts relating to diseases are expected of us. People now want to know why disease conditions exist. They expect to be protected against the hazards of disease and epidemics, and rightly so. We have made great strides in this direction, but this is not enough. "We must carry the message to Garcia" and see that the advantages of present-day medical facilities reach the people of our rural areas. As a result of a benevolent state and federal government great progress is being made in the extension of medical and hospital services. The medical profession of our state has responded to the challenge. We as physicians individually and collectively feel more keenly than ever before our responsibility in safeguarding the health and happiness of our rural people. Organized medicine is determined that to the underprivileged class and the rural areas of our country should come better means of protecting life and providing good health. The North Carolina Medical Society has definitely committed itself to the proposition that there should be better and more evenly distributed medical, nursing and hospital services in our rural areas. It is gratifying to know that, under the leadership of organized medicine, the foundation has been laid and the machinery set up for a great program of extended medical and hospital services to the people of our state. We are meeting the challenge. Let us now carry through courageously and in a determined way to the end that our aims may be accomplished.

Respectfully submitted,
W. R. BERRYHILL, M.D.
M. D. HILL, M.D.
FRED C. HUBBARD, M.D.,
Chairman

... At 5:45 p.m. a recess was taken until 8 p.m.

MONDAY EVENING SESSION

The House of Delegates reconvened in the ballroom of the Carolina on Monday evening, and was called to order at 8:40 p.m. by the president.

Report of the Committee on Publication

Dr. Roscoe D. McMillan (Red Springs), Chairman: I do not have a detailed report to make. I am sure you all read the *North Carolina Medical Journal*. This is your *Journal*, and it is up to the members of the Medical Society of the State of North Carolina to patronize our advertisers, to send in news items, and to do all they can to strengthen the *Journal*.

Report of the Public Relations Committee

The accomplishments of the Public Relations Committee during the past year when reviewed critically and numerically have been rather small. However, our committee started out last summer entirely green and absolutely from scratch. Taking

this into consideration, I do not feel that we have done so very badly.

First: We have very successfully sponsored a high school essay contest under the direction of Dr. Stuart Gaul of Charlotte and in collaboration with the Good Health Association. This contest, which is to be an annual affair, is open to any high school student in the state, and the winner is to receive a scholarship to the North Carolina college of his or her choice. The winner of our first contest is to be presented her scholarship at the general session here Wednesday morning.

Second: We have inaugurated and kept up a public relations column in the *North Carolina Medical Journal*, the articles for this column being written one month by a prominent physician and the next month by a prominent layman on the subject of public relations.

Third: We proposed the presentation of a plaque each year to that county medical society which did the most for public relations during that year. This proposal has died a very agonizing death because of lack of interest by the county societies.

Fourth: It was attempted to have a public relations committee appointed in each county medical society to work with the state committee. This met with only fair success.

Fifth: A most successful, though poorly attended, Public Relations Conference was held in Raleigh on March 21. It is hoped that this can be made an annual affair. At this conference the morning hours were given to short papers by state authorities on various phases of medical public relations. The afternoon session was devoted to the discussion of and the organization of a Public Relations Council.

Sixth: As a result of the above conference, an adequate Public Relations Council has been appointed. This council consists of a public relations councilor from each of the ten districts appointed with the help of the regular executive councilor of that district. We have been fortunate in getting outstanding men as councilors in each district; three of the ten are past presidents of the Medical Society. These councilors are to act as contact men between the state public relations committee and the public relations committees of the county societies in the individual district. In this way, we hope to do what we so far have failed to do—to take a public relations program to the local county societies and thereby to the individual doctors.

The plans for the coming year are: First, through our councilors to organize public relations committees in each county society. Second, during the summer months to organize adequate local speakers' bureaus in each county society, an adequate state speakers' bureau, and with the already promised help of the American Medical Association, a speakers' bureau of nationally known men outside of the state. Third, to start in the fall to provide an organized public relations program for the local and state committee. This program will consist of radio talks, newspaper articles, talks before civic organizations, motion pictures, and so forth. The extent of the program is going to be limited by the lack of time which members of the local and state committees can give, and even more so by the lack of funds which are available. But we can at least begin what we hope in a very few years will turn into a public relations program comparable with other states.

As to finances, the Public Relations Committee of the North Carolina Medical Society spent \$750.00 of the Society's money during the past year—\$600.00 for a scholarship, and \$150.00 for expenses incidental to carrying on the high school contest. We do not know what we will be allowed for the coming

year. The Public Relations Department of the Medical Society of Virginia spent \$17,407.80 in 1946-47, and were budgeted for \$28,000.00 in 1947-48. The Public Relations Department of the Michigan Medical Society has been given \$134,000.00 in the 1948 budget. Dr. McMillan and Mr. Barnes were recently approached by a North Carolina commercial service who presented an unsolicited prospectus whereby they would handle the North Carolina Medical Society's public relations program for \$14,000.00 the first year.

DONALD B. KOONCE, M.D.,
Chairman

... A motion to accept this report was seconded and carried.

Report of the Finance Committee

Dr. V. M. Hicks (Raleigh), Chairman: The Finance Committee had a meeting about two months ago, and after the meeting made a report to the Executive Committee. I have served as chairman of the Finance Committee now for a number of years, and have seen the Society go up the hill and down again on its finances. We were doing very well for several years, because we were not spending any money and were not doing very much in a business way. But the Society at its last annual meeting, as you well know, embarked upon a new program, which involved the employment of a whole-time executive secretary and coordinating its various business functions. This has not yet been completed, but the result of it is that the Society this year is operating at a deficit. It is able so to do because in the years past a surplus was built up.

Many things are coming up before the Executive Committee during the year which involve the immediate expenditure of money that is not included in the anticipated budget; and there is no money available.

All of this I have said is preliminary to the recommendation that the Finance Committee made to the Executive Committee at its last meeting here, which was that the dues of the Society be increased to \$25 a year. If the Society is to go forward in a business way and in a representative way in North Carolina we must do this. It is the only way we shall raise the money that will enable the officers of the Society to put on the program that the membership wants. Those of you who were here this afternoon heard the President's recommendation that the dues be increased to this amount. That is the sense of the Finance Committee, and that is its recommendation to the House of Delegates.

... Dr. Wayne J. Benton of Greensboro moved that the report of the Finance Committee be accepted and the dues increased to \$25 a year. This motion was seconded. Dr. D. T. Smith of Durham suggested that the increase in dues might work a hardship on full-time health-department employees and full-time employees of medical schools. He suggested as an amendment that this increase not apply to members on a full-time, salaried basis but that their dues remain at the old rate. Following some discussion, Dr. Paul F. Whitaker of Kinston offered the following amendment to Dr. Benton's motion: "Provided, that the dues of certain teachers and certain men in public-health work shall be fixed by the Executive Committee." This amendment was seconded and put to a vote, but was not carried. Dr. Benton's original motion was then put to a vote and carried with one dissenting vote.

Report of the Conference Committee on Crime and Psychiatry Cooperating with the North Carolina Bar Association

It is regretted that your committee is unable to make any definite report of importance concerning our action during the past year. A good deal of information has been assembled and it is hoped that this may be of value in our later deliberations.

A committee from the North Carolina Bar Association was late in being appointed by the Bar Association, and it has not been practical to secure a joint meeting of the two committees as yet.

It may be of interest to the House of Delegates to know the membership of the North Carolina Bar Association committee. It is as follows:

Frank C. Patton, Chairman.....	Morganton
Robert E. Lee	Wake Forest
Charles W. Tillett	Charlotte
W. H. Holderness	Greensboro
R. A. Whitaker	Kinston

It is the suggestion of your chairman that your committee may be reappointed or continued.

Respectfully submitted,
JAMES W. VERNON, M.D.,
Chairman

Report of the Committee to Study the Recommendations Made in the Report of the Board of Medical Examiners

Dr. J. G. Raby (Tarboro): The report made this afternoon by Dr. Procter, secretary of the Board of Medical Examiners, contained several recommendations. The first is annual registration of all physicians. The committee appointed by your president this afternoon approved that item.

The Board's second recommendation is for registration of resident physicians. Your committee recommends approval of that.

The third recommendation is for the registration of internes. Your committee recommends approval, with the stipulation that this registration not carry a fee.

Item four concerns the basic-science law, which the Board recommends. The purpose of this law is to require anyone practicing any of the healing arts to pass a basic-science examination before he can be licensed. The committee recommends approval by the House of Delegates.

Recommendation five is for "Institution of the injunctive process, which gives the judge an opportunity to issue a temporary restraining order, and if there is further violation on the part of the physician trial is unnecessary." The committee recommends approval.

The Board's last recommendation is that the law be amended so that, in case of revocation of license and appeal to the superior court, the trial could be held in Wake County. Dr. Procter stated that the records would be in Wake County. The committee recommends approval of that recommendation.

... Dr. L. R. Hedgpeth of Lumberton asked if there would be any charge for the annual registration. Secretary McMillan replied that there would be. Dr. Rachel Davis of Kinston asked why the \$25 privilege tax paid to the state every year did not serve to register all doctors practicing in the state. Secretary McMillan stated that both the Revenue Department and the Narcotics Bureau had told him that they were not able to furnish accurate information on the total number of doctors practicing in North Carolina.

Dr. Strosnider moved that the report be tabled. This motion was seconded and put to vote, but was not carried. Dr. W. A. Sams of Marshall then moved that the reference to annual registration of all physicians in the report of the committee on the recommendations of the Board of Medical Examin-

ers be eliminated, and that the rest of the report be adopted. This motion was seconded and carried.

Report of the Committee on Home Care for Veterans

The Committee on Veterans Affairs has held two meetings during the past year. In addition to these there have been many conferences between members of the committee, representatives of the Veterans Administration, and physicians. During the course of the year there were two meetings on the home-care program for veterans on the national level. These meetings were attended by representatives of the medical societies and intermediaries from many of the thirty-eight states which have a home-care program for veterans. On September 14, 1947, your chairman attended such a meeting in Washington, D. C., and on November 6, 1947, Mr. E. B. Crawford of the Hospital Saving Association and Mr. Barnes, our executive secretary, attended a meeting in Chicago.

One very significant thing was brought out in these discussions—namely, that all the thirty-eight states which are working on this program are experiencing the same difficulties and have essentially the same point of view as we have in North Carolina. This fact within itself was of some comfort to us, and enabled us better to approach the overall picture and at the same time pointed very definitely to the fact that if anything is ever to be accomplished with the Veterans Administration all of these thirty-eight states will have to act largely as a unit in exerting their influence.

In addition to the meeting referred to above, private conferences have been held with Dr. J. C. Harding, who is in charge of the Home Care Program for the Veterans Administration, and Dr. H. H. Earp, from the Richmond office. Also on January 25, 1948, we met with Dr. Earp and Dr. Eastwood from the Washington office. A lengthy discussion was held with these gentlemen, and many questions were asked. For example, the question was asked, "Will the Veterans Administration clinics be further expanded and take over more and more of the outpatient care of the veterans?" The answer to this was "No"; but, frankly, it did not sound too convincing. Also, "Will your Veterans Administration Hospitals now being contemplated for North Carolina have large outpatient services?" The answer to this was "No."

The following statement was made by Dr. Earp, and we have his permission to quote him: "The Veterans Administration will always need the support of the medical society in the states, because the Veterans Administration can never establish enough clinics to give the veterans adequate medical treatment."

Dr. R. M. Cullison has replaced Dr. Weirick in Winston-Salem. From the best we are able to learn, Dr. Cullison has been with the Veterans Administration for approximately ten years. He is a native of Iowa, had an active practice in internal medicine until he went to the Veterans Administration. He was transferred to North Carolina from Fort Howard in Baltimore.

We have been told recently that new and simpler forms were in process of being printed, and also that Dr. Magnuson's broad policies would in all probability be essentially the same as General Hawley's. Dr. Eastwood and Dr. Earp also assured us that the Veterans Administration was desirous of going ahead with the local programs and they anticipate no new clinics to be established in North Carolina but there would probably be increased staff in the clinics already in existence. They seem to feel that within the next five years probably the Veter-

ans Administration clinics would do nothing much more than rating examinations for pensions and sufficient amount of work to keep their staffs professionally satisfied.

Such statements of policy would lead one to expect that the home-care program should function well and be an asset to the Veterans Administration, the veterans, and the physicians. Yet, in actual practice the whole thing becomes so complicated by governmental red tape and directives and counter-directives from one office to another that we doubt seriously if it can ever work effectively and reasonably. This type of confusion points in a very small way to what can happen under governmental medicine. Your committee still feels that the principles of medical care of a veteran for a service-connected disability by his own local physician, who will in turn be remunerated on a fee-for-service basis—a fee agreed to by the Medical Society and the Veterans Administration—is sufficiently fundamental to fight for. Therefore, your Committee definitely approves of the home-care program for service-connected disabilities, but at the same time opposes very vigorously the building of large veterans' hospitals and clinics throughout the country which will unquestionably be used ultimately for the care of non-service-connected disabilities. Furthermore, it is our opinion, if the home-care program for veterans is to be continued, that hospitalization in local institutions should be allowed for service-connected disabilities which are not acute emergencies. Approval of this would undoubtedly be difficult to obtain.

We also feel that the various veterans' organizations should be made aware of what the home care program means and also of what it would mean to have the large veterans' hospitals for a regimented program of medical care. We feel that the same amount of money required to build and maintain these large hospitals could be expended much more profitably to the veteran by enlarging and improving existing medical and hospital facilities in the veteran's home community. In short, our year's work has been not without difficulty, and we do not feel that we have accomplished very much.

E. I. BUGG, M.D.
ALEXANDER WEBB, Jr., M.D.
J. H. McNEILL, M.D.
J. B. STEVENS, M.D.
E. McG. HEDGPETH, M.D.,
Chairman

... Upon motion, duly made and seconded, this report was adopted.

Report of the Cancer Committee

On behalf of the Cancer Committee it gives me great pleasure to present to you this report on the activities and accomplishments of this committee during 1947-48. It is our opinion that colossal strides have been made during the past year in the control of cancer in North Carolina.

A report of the activities of this committee prior to December 7, 1947, was presented to the Executive Committee in Raleigh on that date. This report will deal with the activities since that date.

The committee wishes to express its thanks to President Robertson and Secretary-Treasurer McMillan for the letter to all county societies asking that their April meeting be devoted to cancer.

The following constitutes, we think, colossal strides in cancer control in our state.

First: We have been able to secure a director of cancer control in the State Board of Health. I am happy to report that Dr. Ivan Procter of Raleigh, one of the state's most prominent obstetricians and gynecologists, has accepted this post. He has as his

able assistant Dr. Mildred Schram, a Doctor of Philosophy, as field director. Dr. Schram was formerly director of cancer control for the Donner Foundation in Philadelphia and has had many years of experience in cancer control. A survey has been made of the needs of the state. The operation and methods of other states have been studied. Now we feel that North Carolina is well on the way to have the best system of cancer control of any state in the nation. Time will be required to accomplish this, but it will be accomplished. On Tuesday, April 27, 1947, the first cancer detection center and diagnostic management center in North Carolina opened its doors in Wilmington. Other counties to have similar centers in the very near future are Buncombe, Mecklenburg, and Forsyth. The establishment of clinics in these counties has already been approved by the local county medical societies. The clinics are financed by grants from the U. S. Public Health Service and the American Cancer Society, North Carolina Division, and funds available from the State Board of Health. I would ask and urge your utmost cooperation with Dr. Procter and Dr. Schram.

Second: The re-organization of the American Cancer Society, North Carolina Division. At a meeting held in Raleigh on March 30 this re-organization took place. A new constitution and by-laws were adopted and officers elected. This constitution and by-laws, as adopted, places absolute control of this organization in North Carolina in the hands of the Medical Society of the State of North Carolina through its Cancer Committee. It was the feeling of the committee that, since cancer is purely a medical problem, the control of any voluntary health agency dealing with this disease should be by organized medicine. The chairman of the Cancer Committee is the chairman of its Executive Committee and Board of Directors. Members of the Cancer Committee are members of both bodies. The majority of the members of both committees are physicians. The present Commander of the American Cancer Society, North Carolina Division, Mrs. George E. Marshall, has always been most cooperative in seeking advice from and carrying out the desires of the committee. We would commend to you and ask your support for this organization, for in this state it is your organization. The committee has held four meetings during this year. All have been well attended.

The chairman attended the national meeting of the American Cancer Society in New York last October. Dr. Ivan Procter attended the regional meeting of the organization in Miami, Florida during October.

During the coming year we hope to have established within the State Board of Health a cytological laboratory for the mass interpretation of cytological smears for the diagnosis of cancer after the method of Papanicolaou. We feel that this will be a great help toward our aim to make every physician's office a detection center for cancer.

The American Cancer Society is carrying on one of the most intensive educational programs on cancer this nation has ever known. The final results of the educational campaign depend upon the members of the Medical Society of the State of North Carolina. It is the duty of each and every member of this Society to be on the lookout for, and to thoroughly EXAMINE every individual presenting any of the early signs or symptoms of cancer. The burden of proof that a mole, indigestion, lump in the breast, or irregular bleeding is not malignant rests with you.

The committee feels that with the increased interest, education and facilities in North Carolina

cancer should be added to the list of reportable diseases. Much valuable information as to the incidence, location, occurrence in industry of this disease could be gained. We, therefore, recommend to you that the House of Delegates request the State Board of Health to have cancer added to its list of reportable diseases.

In conclusion we would urge that each and every physician become more alert to the early signs and symptoms of cancer and EXAMINE every patient carefully who presents the symptoms.

Respectfully submitted,
IVAN PROCTER, M.D.
L. P. WILLIAMS, M.D.
H. B. IVEY, M.D.
ROBERT P. MOREHEAD, M.D.
E. McG. HEDGPETH, M.D.
HUGH A. McALLISTER, M.D.
F. L. KNIGHT, M.D.
B. W. McKENZIE, M.D.
MONROE T. GILMOUR, M.D.
F. M. HOUSER, M.D.
EDW. W. SCHOENHEIT, M.D.
THOMAS L. LEE, M.D.,
Chairman

... A motion that the report be accepted was seconded and carried.

Organization of the Nominating Committee

A recess of twenty minutes was taken, during which the delegates from the different districts selected their representative on the nominating committee. Following the recess the names of the members elected were reported as follows:

First District—Dr. Zack D. Owens
Second District—Dr. J. S. Rhodes, Jr.
Third District—Dr. Donald B. Koonce
Fourth District—Dr. H. B. Ivey
Fifth District—Dr. L. R. Hedgpeth
Sixth District—Dr. Millard D. Hill
Seventh District—Dr. Claude B. Squires
Eighth District—Dr. John R. Bender
Ninth District—Dr. Ross S. McElwee
Tenth District—Dr. B. O. Edwards

Secretary McMillan appointed Dr. Millard D. Hill of Raleigh as temporary chairman.

Report of the Hospital Saving Association

The printed annual report of Hospital Saving Association, Blue Cross-Blue Shield, is available at our booth, and I would like to take this opportunity to urge each one of you to secure a copy and study it. I would also like to point out some of the main points in this report with more up-to-date figures.

The protection provided by this coverage is now held by approximately 370,000 North Carolinians, and over \$10,000,000 has been paid to the hospitals and physicians in claims. Approximately 250,000 of the total number protected have surgical coverage also. The last two years have shown the greatest new growth in the Association, which within itself is striking evidence of the continued interest in the prepaid protection by the people of the state. The year 1948 will very likely show a total of more than 400,000 participants, with nearly 300,000 on the surgical program. Our payments to hospitals and doctors will be at least two and three-quarter million dollars this year. It is interesting to note that gynecology was responsible for the greatest percentage of the days used in the hospital program, with maternity a close second. In regard to the surgery, tonsillectomies were responsible for the greatest percentage of the actual cases, with maternities next in line and gynecologic procedures third. In the actual cost of procedures, maternities, appendec-

tomies and gynecologic procedures were all about the same. This is "big business" for our Society, and let me say that it deserves the keenest interest and concern of the individual physician and of the Medical Society.

The Hospital Saving Association is anxious and ready to continue any activities relative to the Society and to offer the help of its public relations department and other facilities to the Society and any of its joint services or in any way it may be found helpful. As medical director, I noticed several things about the work that should be of interest to all doctors:

(1) The need for careful reporting of claims in order that they may be promptly and properly processed without extra red tape or questioning.

(2) The need for promptness in processing claims. This is the association of the Medical Society, and each one of us should understand the coverage so that we will not be put in the position of defending our own program. An explanation by the physician to the patient of the existing condition clause will enable us to interpret the problems correctly, and therefore we will not be in a position of defending a turned-down claim. There is definite need for more knowledge and support on the part of individual physicians.

The economic phase of our lives and work as doctors is becoming more and more of a vital problem for all of us. The increasing cost of medical care is difficult for people to bear. The voluntary prepayment principle is of increasing necessity if we wish to maintain the values of scientific medicine and the free enterprise of the American way of life. As a Society we should recognize the tremendous and very real danger of federal participation and eventual control if it is followed through. It should be serious business of ours to encourage and maintain our own program of prepayment so that the people will not lose faith in our voluntary system. It will mean sacrificing some of our previous ideas, and even methods, if we are to preserve basic values. The Hospital Saving Association is more than anxious to help in this fight in any and every way this Society sees fit to use it. As the 1947 report states, "With the continued cooperation and splendid support of the public, the Medical Society of North Carolina and the North Carolina Hospital Association, the Association looks to even greater achievements. Hospital Saving Association is your community health service organization. It is the desire of the Board of Trustees and the staff of the Association to make every effort to continue its services to reach out over the entire state and to make available even greater protection against hospital and surgical expenses."

E. McG. HEDGPETH, M.D.,
Medical Director.

... A motion to adopt the report was seconded and carried.

Report of the Committee on Industrial Health

While the Committee on Industrial Health has had no active meetings it has nevertheless been in contact with the Division on Industrial Health of the American Medical Association, which is quite active in the organization of committees throughout all the state societies. At the instigation of the Council on Industrial Health of the American Medical Association we have succeeded in securing the approval of the Executive Committee of the Society of certain recommendations which we feel are of importance in the development of industrial health in this state. These recommendations are as follows:

1. That the North Carolina State Medical Associa-

tion urge its members to report known cases of industrial diseases to the local health departments.

2. That the North Carolina State Medical Association urge the medical schools of the state to broaden their program for undergraduate and postgraduate teaching of industrial health.
3. That the North Carolina State Medical Association recommend to the county medical societies to appoint committees on industrial health to work with the State Committee on Industrial Health.
4. That the North Carolina State Medical Association urge industry to require a pre-employment physical examination including an x-ray of the chest, since it is the opinion of the Committee that no examination of the chest is complete without an x-ray, and that periodic health examinations include an x-ray of the chest.
5. That the North Carolina State Medical Association urge industry to make provision for employing physically-handicapped individuals, provided they are not infectious to anyone.

The Executive Committee is now in the process of trying to secure consummation of these recommendations.

It is the hope of the committee that an individual committee on industrial health can be appointed in each of the local societies to cooperate with the State Society on all matters involving industrial health.

Your chairman cooperated with the Department of Public Relations in presenting a discussion of public relations in industrial health at a meeting held in Raleigh during March.

This constitutes essentially the activities of the committee.

Your chairman wishes to express his appreciation to the secretary, Dr. McMillan, for his cooperation in the work of the committee.

Respectfully submitted,
HARRY WINKLER, M.D.
Chairman

... Upon motion, duly made and seconded, the report was accepted.

Report of the Legislative Committee

This committee has not been very active this year, because of the fact the Legislature did not meet. But we are expecting the 1949 Legislature to have a number of bills that will require a lot of study and forethought, and this committee is requesting that you please give us your wholehearted support that the bills may be properly guided through the Legislature in such a manner that they will be beneficial and not detrimental to the Society.

We wish to thank you in advance for this service.

MILLARD D. HILL, M.D.,
Chairman
HUBERT B. HAYWOOD, M.D.,
Advisory Chairman
JOSEPH J. COMBS, M.D.
GEORGE W. PASCHAL, M.D.

... A motion to accept the report was seconded and carried.

Report of the Committee Appointed to Effect a Merger of the Hospital Saving Association and Hospital Care Association

Your committee appointed to effect a merger of the Hospital Saving Association and the Hospital Care Association is happy to report that we believe a satisfactory basis for the merger has been worked out. The main difficulty in the past has been the matter of control of the merged association. Quite

naturally neither group was willing to give up control of an organization for the development of which they had worked so hard and so successfully. Both groups, however, were cognizant of the potential benefits of a merger, particularly in view of the national situation that has developed in the drive for a governmentally controlled system of medical care and hospital service.

On April 21 your committee met in Durham with the merger committees of the Hospital Association, the Hospital Care Association, and the Hospital Saving Association. At that meeting a plan was evolved that each group was willing to recommend to its sponsoring organization.

The plan agreed upon is as follows:

The board of trustees of the merged corporation will consist of eighteen members, nine of whom will be appointed by the Hospital Care Association and nine of whom will be appointed by the Hospital Saving Association. The trustees from each association will consist of three doctors, three hospital administrators, and three members representing the public.

The members of the original board of trustees will be appointed for terms of four, five and six years. One appointee from each category of each association will be appointed for four years, one from each category of each association for five years, and one from each category of each association for six years. At the end of their term of office and subsequently, their successors will be elected for terms of three years. They will be elected as follows:

The medical representatives will be elected by the Medical Society of the State of North Carolina; the hospital representatives will be elected by the North Carolina Hospital Association; and the representatives of the public will be elected by the board of trustees of the merged corporation. Members of the original board will be eligible for reelection.

This arrangement gives the merged association the benefit of an experienced board during its early years. It gives the Hospital Care Association equal representation with the Hospital Saving Association on the original board, but gives to the original board and to all succeeding boards the ratio that the Medical Society and the Hospital Association have insisted upon; namely, one-third representation from the Medical Society, one-third from the Hospital Association, and one-third from the public.

Your committee recommends that you approve a merger on this basis.

DAVID T. SMITH, M.D.
ARTHUR H. LONDON, M.D.
GEO. L. CARRINGTON, M.D.,
Chairman

... Dr. David T. Smith moved that the report be adopted. This motion was seconded by Dr. Lester A. Crowell, Jr., and after some discussion was passed.

The report of the Insurance Committee was called for, but no report was given.

Report of the Special Committee on Workmen's Compensation

In September, 1947, the Executive Committee sanctioned the testing of the Workmen's Compensation Act by means of selected cases to be presented to the courts. The necessary cases, suitable as to local circumstances, cooperative patients, and participating physicians, were quite difficult to find.

After reviewing a large number of possibilities, four have been selected to date and legal proceedings are now in progress. These actions are very simple, involve small amounts of money, and are

entirely civil in type. They are friendly in character, and it is clearly understood that they are test cases only. They do not involve the Industrial Commission or any agent of the state. There is every reason to believe that they will reach the Supreme Court with a very minimum of publicity and without having created any new enemies for the profession.

Even if these cases should be decided contrary to our hopes, we will have secured a precedent to guide our future course.

The present chairman of the Industrial Commission has announced that he soon will resign to engage in private business. There is reason to hope that the reorganized Commission will take an attitude more concerned with the welfare of the injured workman and more sympathetic toward the problems of his medical care.

This committee suggests that the Legislative Committee be instructed to attempt to secure at least one simple change in the Workmen's Compensation Act.

Section 26 now reads: "The pecuniary liability of the employer for medical, surgical, hospital service, or other treatment required, when ordered by the Commission, shall be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living when such treatment is paid for by the injured persons, and the employer shall not be liable in damages for mal-practice by a physician or surgeon furnished by him pursuant to the provisions of this section, but the consequences of any such mal-practice shall be deemed part of the injury resulting from the accident, and shall be compensated for as such."

We recommend that the word "for" be inserted in place of the words "limited to." The section would then read: "The pecuniary liability of the employer for medical, surgical, hospital service, or any other treatment required, when ordered by the Commission, shall be for such charges as prevail in the same community for similar treatment of injured persons of a like standard of living when such treatment is paid for by the injured persons, etc."

Respectfully submitted,

G. W. MURPHY, M.D.,

Chairman

R. B. DAVIS, M.D.

FRANK C. SMITH, M.D.

HUGH A. THOMPSON, M.D.

ROWLAND T. BELLOW, M.D.

M. H. GREENHILL, M.D.

A. C. AMBLER, M.D.

VERNE S. CAVINESS, M.D.

T. R. HUFFINES, M.D.

HARRY WINKLER, M.D.

... Following some discussion, Dr. W. M. Copridge of Durham moved that the report be adopted. This motion was seconded. Dr. C. W. Bailey of Rocky Mount offered the following as a substitute motion: "RESOLVED, that the Act be amended to provide that the files can not be closed in any case until six months after treatment of the case has ceased or been concluded." This motion did not receive a second, and the motion to accept the report of Dr. Westbrook Murphy's committee was put to vote and carried.

Report of the Committee to Review the Matter of Hospital, Medical and Surgical Insurance

Dr. V. K. Hart (Charlotte), Chairman: One year ago, at our meeting held in Virginia Beach, resolutions were passed by the House of Delegates authorizing the formation of a committee to study the question of all-inclusive insurance for people of low income. Last summer the late Dr. Sharpe asked

me if I would not take the chairmanship and organize and select a committee. I did not presume to know about the best qualified men, so I sought the advice of the men who are in the specialties as to who could best serve in this matter. Furthermore, we tried to keep in mind the geographical distribution, so that the state as a whole could be represented. The following were chosen as members:

Dr. H. H. Bradshaw, Winston-Salem

Dr. M. B. Woodhall, Durham

Dr. John S. Rhodes, Raleigh

Dr. R. A. White, Asheville

Dr. H. G. Strickland, Greensboro

Dr. J. B. Sidbury, Wilmington

Dr. Paul F. Whitaker, Kinston

Dr. J. E. J. Jacobs, Charlotte

Dr. David G. Welton, Charlotte

Dr. C. E. Howard, Goldsboro

Dr. J. Street Brewer, Roseboro

Dr. Kenneth L. Pickrell, Durham

These men have reviewed with the members of their specialties their own ideas of the fees which should be charged for service rendered, keeping in mind the original resolution, setting up as a tentative income group those with incomes of \$3,000 for a family (with one person working), \$2,500 for a couple, and \$2,000 for an individual.

The committee had a meeting at Sedgefield last September. To give you some idea of the work done then, I might say it occupied two days, and the report made over two hundred pages of minutes. Fee schedules were outlined. We had another meeting in Raleigh, where the whole question was reviewed. At that meeting in Raleigh it was resolved, so far as the hospital aspect goes, that we would not set an arbitrary room rate. The idea of the committee is to furnish adequate hospital service, as well as surgical and medical care. But, as was pointed out by Mr. Crawford and Mr. Herndon, conditions vary so much in different communities that it is impossible to have a uniform rate. So far as the room or bed rate is concerned, therefore, it is left to the Blue Cross organization to go into the community and write the contract they think best suited to that community, for the hospital services being provided.

Since the last meeting two or three difficulties have arisen with which I should like to acquaint you. In the first place, the Blue Cross people approached us with this question: Could they not sell surgical insurance, according to the fee schedule established, apart from medical insurance; or could not the prospective buyer buy medical insurance and not surgical insurance? In other words, could not this contract be divided according to the wishes of the buyer? The committee feels that if we are to embark on this program this should be sold as package insurance—that the whole plan should be sold if we wish to furnish complete coverage. I think that is just. I know, for one, that the medical man has been militated against in all insurance plans. Furthermore, I think you will agree with me that some of the most catastrophic illnesses we have from an economic standpoint are medical illnesses and not surgical illnesses. At least they can be equally crippling.

The Blue Cross organizations have been rather wary or fearful of medical coverage. They have very little to go on in the way of actuarial statistics. They first wanted to exclude the first two days of all medical illnesses. Dr. Sidbury and Dr. Brewer and Dr. Whitaker, representing medicine, have taken up this question and have recommended that certain illnesses be excluded—in other words, that they should be liable for the first two days of such illnesses as diabetic coma and coronary thrombosis.

It is obvious that most of the doctor's work comes in the early days of such illness. The Blue Cross committees have assured us that they will work with the doctors on this question.

Recently this phase was interjected into the discussion. The committee was asked if we would be willing to agree not to charge an additional amount greater than the difference between the fee schedule finally decided upon by the Medical Society and that provided by the insurance, provided, of course, that the persons come within that income group. I find there is a great difference of opinion on this proposition. Some feel it will encourage the sale of surgical insurance only. Some feel that we should not charge any more, and that the charging of an additional fee is hurting the medical profession.

I feel that when the final report is made to the Executive Committee they should give up one whole session to this problem. It is a matter of great importance. We shall establish precedents which will obligate us in medicine for a good many years. Therefore I think the matter should be given a great deal of thought and consideration.

I am not sure we have the proper income groups. These matters remain to be decided, but I can report to you that I have never worked with a group as sincere and as industrious as the members of this committee. They have put in a lot of work and time on your behalf, and I feel sure that out of these efforts something good will come.

President Robertson: You understand, gentlemen, that this is not a final report of Dr. Hart's Committee. That will be given to the Executive Committee at a later date. Therefore no action is necessary at this time.

Report of the Committee to Study Ways and Means of Improving Our Organization

Dr. William M. Coppridge (Durham): In the president's report to the House of Delegates at Virginia Beach last year was a recommendation that a committee be appointed to study ways and means of improving our Society. Several points were suggested for guidance: (1) to study methods of strengthening our organization in general; (2) to suggest means of improving our public relations; (3) to study ways and means of establishing permanent executive offices in a central location and of increasing the executive personnel of the Society; (4) to consult and cooperate with the Board of Medical Examiners in solving problems of licensure and of regulation of medical practice; (5) to consult the Editorial Board and editors of the *Journal* and seek to aid them in conducting this important enterprise. I think, from the reports you have heard here today, we can say that most of these suggestions have been followed and that we are making definite progress.

Dr. Koonce, in his splendid report, has outlined what is being attempted in the way of improving our public relations. President Robertson has outlined the fine work being done by our executive secretary and the additional benefits to be expected from his services in the future. Dr. Robertson also took up the matter of establishing permanent executive offices.

This committee is headed by Dr. C. T. Smith, of Rocky Mount, as chairman. He found at the last minute he could not be here and asked me to present this report for him. The Committee is composed of the following members:

Dr. Robert L. McMillan, Winston-Salem
Dr. Wm. M. Coppridge, Durham
Dr. Monroe T. Gilmour, Charlotte
Dr. M. D. Bonner, Jamestown

Dr. J. Stuart Gaul, Charlotte
Dr. E. E. Menefee, Durham
Dr. Ralph G. Fleming, Durham
Dr. W. L. Thomas, Durham
Dr. R. H. Crawford, Rutherfordton
Dr. W. W. Noel, Henderson
Dr. A. A. James, Sanford
Dr. Alexander Webb, Jr., Raleigh
Dr. F. P. Hunter, Warrenton
Dr. W. T. Rainey, Fayetteville

Because of the large size of the committee, Dr. Smith had some difficulty in getting all the men together. For that reason he very wisely, I think, divided the group and had it meet in two sections, one composed of the members from the east and the other of those from the west. These two sections, in their reports, made essentially the same recommendations, some of which have already been acted upon by the Society here today.

Dr. Smith, however, has not been able to get the two groups together to formulate a combined report. He has asked me to state this fact and to say to you that he will attempt to get the whole committee together and prepare a complete report, which will be furnished to the Executive Committee at a later date. I suggest, therefore, that this report be received merely as information, I think, Mr. President, it will be unnecessary to take any action on it at this time.

Report of the Committee to Cooperate with the Council on Medical Service and Public Relations of the American Medical Association

Dr. Wingate M. Johnson (Winston-Salem), Chairman: I should like to say something about the World Health Organization, which will meet soon in Geneva. The United States should take part in this organization, and the Senate has passed a bill proposing this. At present that bill is tied up in a committee in the House.

I should like to offer the following motion: **RESOLVED** that the House of Delegates of the Medical Society of the State of North Carolina go on record as urging our representatives in Congress to do all in their power to further the passage of the bill providing for participation by the United States in the World Health Organization, and that the secretary be instructed to write or wire our representatives to that effect.

... This motion was seconded and carried.

Report of the Maternal Welfare Committee

The Committee on Maternal Welfare has completed its second year of active work at this time. Its duties, according to the by-laws of the Medical Society of the State of North Carolina, were to promote high standards of obstetric care for the state.

This could be done only by learning the specific problems which are present within the state, relative to the care of obstetric patients. A maternal mortality survey was begun on August 1, 1946. This study has continued since that date, and 320 maternal deaths have been fully analyzed. A copy of each analysis has been mailed to the physician who attended the patient in her final illness. Seventy-two additional maternal deaths are in the process of study and analysis at the present time. Five meetings of the committee have been held during the past year to review and analyze these records, and to transact the other business of the committee.

The maternal mortality survey has served the double purpose of stimulating interest in obstetrics upon the part of the physicians within the state, and learning the exact problems which must be over-

come to improve our record. They are as follows:

(1) Ignorance or neglect upon the part of the patient and her family is the principal factor responsible for 40 per cent of our maternal deaths. This may be overcome by a widespread educational campaign to reach every citizen of North Carolina. One comprehensive newspaper article has been prepared, and released after its approval by the Public Relations Committee of the Society. It will soon appear in papers throughout the state. The Maternal Welfare Committee is now engaged in a project for preparation of a series of radio transcriptions of public information. Tentative arrangements have been made for their broadcast throughout the state.

(2) The North Carolina Hospital Association has indicated their interest in assisting with any program to improve maternal care in North Carolina. The greatest number of maternal deaths have been problems of obstetric hemorrhage, and the difficulty of the administration of whole blood transfusions has accounted for many preventable deaths which are considered the responsibility of the physician attending the patient. Blood banks must be established to correct this deficiency. The North Carolina Hospital Association will assist in encouraging their formation. The responsibility of the hospitals will be further emphasized to correct specific problems which have been learned in the committee's studies.

(3) An article has been prepared for the **North Carolina Medical Journal** each month. General problems are thereby brought to the attention of the physicians of the state.

The committee was supported originally by a gift from an anonymous donor, and has received additional support from time to time. The financial statement of the committee for the current year is as follows:

Financial Statement—April 30, 1948

Balance June 30, 1947.....	\$1270.27
Receipts	495.00
	<hr/>
	\$1765.27
Disbursement	
Secretary	\$1375.00
Supplies and printing.....	215.93
	<hr/>
Balance April 30	\$ 174.34

Respectfully submitted,
FRANK R. LOCK, M.D.,
 Chairman
J. STREET BREWER, M.D.
G. M. COOPER, M.D.
ERNEST W. FRANKLIN, JR.,
 M.D.
JASPER S. HUNT, M.D.
THOMAS LESLIE LEE, M.D.
IVAN PROCTER, M.D.
R. A. ROSS, M.D.
R. A. WHITE, M.D.

... A motion to accept the report was seconded and carried.

Report of the Committee on Selection of Faculty Members for the Four-Year Medical School of the University of North Carolina

President Robertson: There is a report to be made for the Committee to collaborate with President Graham and Dean Berryhill of the University of North Carolina regarding the selection of the faculty for the medical school to be established at Chapel Hill. This committee was appointed by Dr. Sharpe, who asked me to serve as chairman. The other members are Dr. Coppridge of Durham and Dr. Brockton R. Lyon of Greensboro.

We met twice at Chapel Hill with Dean Berryhill and others representing the University and had most satisfactory conferences with them. I think they see eye to eye with us and feel, as we do, that they want nothing but the best; and they are determined to have it. Since that time, and also in accordance with Dr. Sharpe's wishes, the committee has been enlarged to include two members from each of the specialties, and is now quite large. The committee met Sunday afternoon, and met once before in Raleigh.

At the meeting Sunday afternoon the chairman was directed to appoint two subcommittees from that group, one to confer with the University authorities on the matter of salaries and also the matter of the maintenance of proper relations between the medical school and the profession, the faculty and their relation with private practitioners. We felt that is a very fundamental and important thing. That subcommittee was appointed with Dr. Arthur H. London as chairman, the other members being Dr. Russell Lyday of Greensboro, and Dr. V. K. Hart. The other is a subcommittee on legislation, consisting of Dr. J. B. Sidbury, as chairman, Dr. Amos Johnson of Garland, and Dr. W. A. Sams of Marshall. The subcommittee on legislation is to collaborate with the Legislative Committee of the State Medical Society to secure appropriation by the General Assembly of a sum adequate to obtain a top-flight faculty. As you understand, the last legislature did not appropriate anything for the payment of the faculty, and unless we have an active committee to see that this is carried through the whole thing may fall flat.

I give you that just as a progress report.

NEW BUSINESS

Creation of a Section on Pathology

Dr. E. McG. Hedgpeth (Chapel Hill): I have been requested by the North Carolina Pathological Society to present a request for a Section on Pathology. Today I think there are some twenty-five pathologists in the state. I move that a Section on Pathology be created in the North Carolina Medical Society.

... The motion was seconded by Dr. Harris and carried.

Revision of the Medical Practice Act

Dr. C. W. Bailey (Rocky Mount): The Edgecombe-Nash Counties Medical Society authorized me to offer this resolution:

"WHEREAS: The laws regulating the practice of medicine and surgery in North Carolina were first passed in 1885 and few amendments have been made to the law since then; and

"WHEREAS: The practice of medicine and surgery in its different branches has changed considerably, and to the extent that the law has not kept up with the changes; and

"WHEREAS: Certain groups in the state—namely, the North Carolina Industrial Commission, the State Commission for the Blind, and some others—have attempted to make changes in the law by decree rather than in the regular, democratic way; and

"WHEREAS: A number of other states have taken the lead in bringing their laws up to date and in a much better way regulating the practice of medicine and surgery and its various specialties, to the mutual advantage of the profession and of the public; and

"WHEREAS: We, the members of the Edgecombe-Nash Medical Society, believe changes in the law pertaining to the practice of medicine are neces-

sary but that they should be brought about in the democratic way:

"NOW, THEREFORE, BE IT RESOLVED that we, the members of the Edgecombe-Nash Medical Society, do hereby petition the House of Delegates of the North Carolina Medical Society to hear discussions in this matter, to appoint a committee to make a study of the changes needed, or to have one of its regular committees make this study, with power to act, or to bring it back before the House of Delegates for approval, as it sees fit, and then to petition the legislature to make the necessary changes."

... Dr. Rachel D. Davis of Kinston moved that the resolution be accepted and referred to the North Carolina Board of Medical Examiners. Dr. D. T. Smith seconded the motion, and it was carried with some dissenting votes.

Honorary Membership for Dr. Janet Alexander

Secretary McMillan read the following letter from the secretary of the Mecklenburg County Medical Society:

Dear Dr. McMillan:

A member of the Mecklenburg County Medical Society, Dr. Janet Alexander, has been a missionary to India since 1920. I believe she joined the State Medical Society in 1942, when she was back in this country during the war. She returned to India in 1945. Since her return to India, she has been made a courtesy member of this Society. Dr. Alexander has won distinction by her work in India and she, by her example, has reflected credit and honor upon the profession. This Society feels that she should be paid due tribute. We feel that, in devoting her life to medical missionary work, she amply meets the requirements of an Honorary Member of the State Society as provided for in Section V, Article 4, of the Constitution. We would therefore like to present her name to the Council for nomination to this position and action at the next meeting of the House of Delegates. Dr. Alexander is at present in charge of the hospital at the American Mission, Montgomery, West Punjab, Pakistan.

Very sincerely yours,

WILLIAM O. JOHNSTON, M.D.
Secretary and Treasurer

... Dr. Davis moved that Dr. Janet Alexander be made an honorary member of the Medical Society of the State of North Carolina. This motion was seconded and carried.

Following some announcements by Secretary McMillan, President Robertson declared the House of Delegates adjourned until Wednesday afternoon at 2:30.

WEDNESDAY AFTERNOON SESSION

May 5, 1948

The House of Delegates convened in the small card room of the Hotel Carolina and was called to order by the president, Dr. James F. Robertson.

Dr. V. C. Lanier was seated as the delegate from the Davidson County Medical Society, and Dr. R. B. Davis in place of Dr. H. R. Parker, Guilford County.

Report of the Committee on the President's Message

Your committee charged with the responsibility of studying President James F. Robertson's report to the Society, and of making certain recommendations to the House of Delegates based on this address, wishes to submit the following report:

I. The committee wishes to commend President Robertson upon the clarity and inclusiveness of his

address, as well as upon its brevity, and to express to him for the Society our appreciation for his statesmanlike comprehension of the problems of our profession and for his wise and courageous leadership in their solution.

II. After study of his suggestions and recommendations, we favor certain of Dr. Robertson's proposals as follows:

1. That there be a more adequate representation of the public on the merged hospital boards.

2. That further definite and concrete steps be taken toward a solution of the problems raised by the high cost of medical care through a more adequate correlation of the functions of the Medical Care Commission, the Hospital, the Insurance Committee, the Cancer Committee, the Public Relations Committee, and other committees, and that the physicians and the public be more effectively informed of the steps that are being taken in this direction.

3. That this committee agrees heartily with Dr. Robertson that such unethical practices as fee splitting, the rebate system, and so forth, are intolerable, and strongly urges that the Society take such steps as may be necessary to abolish them.

4. That there should be a rejuvenation of, and a re-emphasis upon the county medical society, not only as a scientific and professional body but also as a liaison group between the public and the profession, charged with the improvement of this mutual relationship in each community and especially with establishing an adequate organization for efficient handling of emergency and night calls, as well as the control of other matters which make for improved public relations.

5. That there be a revision of the Constitution and By-Laws of the Society so that the first vice president shall succeed to the office of, and shall serve out the term of any president who dies while in office, or who is required for reasons of health or otherwise to resign his office; and that in the same way in succession the second vice president shall likewise succeed.

6. That there be established in Raleigh an adequate and adequately staffed office for the conduct of the business of the Society under the direction of our executive secretary, Mr. James T. Barnes, with the continued advice, assistance, and cooperation of our invaluable secretary, Dr. Roscoe McMillan.

Respectfully submitted,

JAMES H. McNEILL, M.D.,
Chairman

DONALD B. KOONCE, M.D.
MONROE T. GILMOUR, M.D.

... A motion to adopt the report was made and seconded. Dr. C. W. Bailey of Rocky Mount objected to the proposed change with reference to representation of the public, the medical profession, and the hospital profession on the board of the merged associations. President Robertson stated that that question had already been taken care of by vote of the House of Delegates on Monday, and suggested that reference to it be deleted. A substitute motion was made that the Committee's report be accepted, with the deletion of that part relating to increased representation of the medical profession on the board of directors of the merged Blue Cross association. The substitute motion was seconded. Following some discussion on the question of the first vice president's succeeding to the presidency, the substitute motion was put to vote and carried.

Resolution to Amend Chapter VI, Section 2 of the By-Laws

Dr. Julian A. Moore (Asheville): I should like to present the following resolution: **RESOLVED**, that Section 2 of Chapter VI of the By-Laws be amended to read as follows:

"The President-Elect shall assist the President in the performance of his duties as may be requested by him and otherwise prepare himself for assuming the duties of President. The President-Elect shall be a member of the Council ex-officio and its president. Should a vacancy occur in the office of the President, the First Vice President shall succeed to the presidency. In the event the first vice presidency becomes vacant, the Second Vice President shall succeed to the presidency. In case the office of President-Elect should become vacant, the Executive Committee shall fill the vacancy, but no member of the Executive Committee shall be eligible."

I move the adoption of this resolution, Mr. President.

Dr. Davis: I should like to second Dr. Moore's motion except for one thing. He said: "In the event the first vice presidency becomes vacant, the Second Vice President shall succeed to the presidency." What he meant was that if the office of the president again became vacant the second vice president should ascend to the presidency.

Dr. Moore: I will accept that.

... Since an amendment to the By-Laws has to lie over for twenty-four hours, Dr. Moore's motion was not acted upon.

Report of the Nominating Committee

1. President-Elect—Dr. G. Westbrook Murphy, Asheville
2. First Vice President—Dr. Joseph J. Combs, Raleigh
3. Second Vice President—Dr. J. A. Elliott, Charlotte
4. One member of Hospital Saving Association of North Carolina, three-year term—Dr. V. K. Hart, Charlotte
5. Three delegates to the American Medical Association, two-year terms
Dr. Roscoe D. McMillan, Red Springs
Dr. C. F. Strosnider, Goldsboro
Dr. Ross S. McElwee, Statesville
6. Three alternate delegates to the American Medical Association, two-year terms
For Dr. Roscoe D. McMillan, Dr. B. O. Edwards, Asheville
For Dr. C. F. Strosnider, Dr. William M. Coppridge, Durham
For Dr. Ross S. McElwee, Dr. G. Grady Dixon, Ayden
7. Three delegates to the Medical Society of Virginia for 1948
Dr. John Payne, III, Sunbury
Dr. Moir S. Martin, Mt. Airy
Dr. E. W. Furgurson, Plymouth
8. Three delegates to the Medical Association of South Carolina, 1949
Dr. L. R. Hedgpeth, Lumberton
Dr. D. B. Koonce, Wilmington
Dr. Claude Squires, Charlotte
9. Three delegates to the Medical Society of Georgia, 1949
Dr. John R. Bender, Winston-Salem
Dr. Elias Faison, Charlotte
Dr. N. O. Benson, Lumberton
10. Three delegates to the Tennessee State Medical Association, 1949
Dr. J. H. McNeill, North Wilkesboro
Dr. Julian Moore, Asheville
Dr. V. H. Duckett, Canton
11. One delegate to the North Carolina Dental So-

ciety, 1949

Dr. H. B. Ivey, Goldsboro

12. Place of meeting, 1949—Pinehurst, if acceptable; if not, the secretary, the president, and the Executive Committee will select a place of meeting.

Respectfully submitted,

M. D. HILL, M.D., Chairman

... Dr. H. C. Thompson of Shelby moved that the report be accepted. Dr. C. W. Bailey seconded the motion.

President Robertson: Before we act on this may I say one word, please. That is with reference to the place of meeting. Down in Wilmington we are very anxious to have a meeting there, and we are working now and have been for the past year on it. We are trying to get an ocean liner anchored in the river there that will sleep five or six hundred. There would be an auditorium, and would be plenty of smaller rooms for meetings like this, and a good dining room. If we can get that we do not want you to close the door on it. These people here have not been too cordial. If we can put that over maybe we could have the meeting during the Azalea Festival. So please leave the door open to us.

A Member: The report suggests Pinehurst for the meeting "if acceptable." Acceptable to whom?

Dr. M. D. Hill: That was left open so that the Executive Committee can change it if they desire.

... The motion to accept the report was put to vote and carried.

Establishment of Committee to Investigate the Scarcity of Physicians

Dr. R. B. Davis (Greensboro): I think everybody recognizes the scarcity of doctors, particularly doctors who practice general medicine in the areas that are thinly populated. We might be able, as those on the outside of the teaching profession, to lend some new knowledge or throw some new light on the possibility of changing the medical-educational program from what it is today. North Carolina has been a leader in medicine for some time. We were one of the first medical societies, if not the first, in the United States. We were one of the first states in the Union to require an examination before a person could get the privilege of practicing medicine. I feel that we might go on and be the first state organization to begin to investigate and answer the public criticism of the scarcity of doctors.

I offer the following motion: **RESOLVED** that the President be instructed to appoint a committee of three to investigate the matter of the scarcity of physicians and to bring back to this Society at the next annual meeting a practical program for medical education.

... Dr. James H. McNeill of North Wilkesboro seconded the motion, and after some discussion it was carried.

Motion to Relieve the Secretary-Treasurer of his Duties as a Delegate to the American Medical Association

Dr. Ross S. McElwee (Statesville): I should like to offer a motion that the secretary-treasurer be relieved of the necessity of going to the A.M.A. each year as a delegate.

... There was no second to this motion, and it was not acted upon.

After some further discussion, the House of Delegates adjourned *sine die*.

REPORTS FILED BUT NOT READ

The following reports were filed with the secretary after the meeting of the House of Delegates.

Report of the Child Welfare Committee

Upon appointment as chairman of the Child Welfare Committee, I communicated with Dr. George M. Cooper in charge of the Maternal and Infancy Division of the State Board of Health and offered the services of this committee in any undertaking that the Health Department might have. Dr. Cooper has called on the chairman of this committee for consultation and advice frequently during the year.

The president of the North Carolina Pediatric Society submitted to the committee a list of recommendations based on the findings of the Pediatric Survey made by the American Academy of Pediatrics. The recommendations were studied and approved by each member of the committee and the approved recommendations, with the entire committee's signature, were forwarded to Dr. Frank Sharpe, the Society's president, on October 9, 1947, with the request that he submit this to the Executive Board. In November, 1947, Dr. Sharpe gave his approval of these recommendations in a telephone communication with the committee's chairman. These recommendations are now embodied in the report of the North Carolina Pediatric Survey, which has been issued as a supplement to the *North Carolina Medical Journal*.

There has been no other official activity of the committee.

Respectfully submitted for the committee,
A. H. LONDON, JR. M.D., Chairman

Report of the Committee on Postgraduate Study

During the past year, through the University of North Carolina Extension Division, the North Carolina Chapter of the American Cancer Society and the National Foundation for Infantile Paralysis, four postgraduate medical classes were held from January 15 through April 14, 1948, at Lumberton, Salisbury, Raleigh and Greensboro, consisting of seven weekly sessions of an afternoon clinic and evening lecture. At Salisbury there were ten such sessions. The total enrollment for the courses at the four cities was 283. Certificates were issued to the doctors attending 80 per cent of the exercises. The programs were published in the *North Carolina Medical Journal*.

Postgraduate medical symposiums also were held in Charlotte under the auspices of the Matheson Foundation, and two were held in Durham—one by Watts Hospital and the other by Duke University. All three symposiums were well attended.

Report of the Editorial Board of the North Carolina Medical Journal

The Editorial Board of the *North Carolina Medical Journal* feels that the time has come to give you a little more detailed account of their stewardship than has been done heretofore. We feel that you will

be interested in learning what has happened and is happening to your *Journal*.

Volume 8 contains 806 pages—114 more than volume 7, which was the next largest and contained 692 pages. The chief reason for the large number of pages was the fact that volume 8 contained four special issues—the Hanes Memorial Issue gotten up by Duke, the Allan Memorial Issue gotten up by Bowman Gray, the Manning Memorial Issue gotten up by Carolina, and the McCain Memorial Issue. Since we will probably have no special issues in 1948, we will need more papers contributed throughout the year.

We began using a heavier cover on the *Journal* in August, 1947. Within the next few months we will have to change to a lighter weight of paper inside, since we can no longer get the 65-pound paper we have been using. This will make the *Journal* a little thinner than before.

The revenue from advertising has increased from \$3,779.61 in 1940 to \$16,310.81 in 1947. Printing costs, including salaries and cuts (the *Journal* now pays up to \$20 on the cost of cuts for any one article), have increased from \$6,716.00 in 1940 to \$20,165.41 in 1947. This considerable increase can be largely explained by the heavier cover, the greater number of pages, the fact that the print order for 1947 averaged 2800 copies per month as compared to 2350 copies for 1946, and the continued rise in the cost of paper and labor. By comparison, the revenue from advertising in 1946 was \$15,661.69 and printing costs were \$13,286.22. We think it is of interest, too, that the Society took in \$96.60 from subscriptions and issues sold to non-members of the Society during 1947.

Approximately 127 scientific articles were published during 1947. Twenty-eight of these were from out-of-state contributors, 32 from Duke, 19 from Bowman Gray, 14 from Carolina (including contributions from Carolina alumni for the Manning Memorial Issue), and 38 from the state at large. There were published approximately 57 editorials.

The circulation on March 18 was approximately 2689: 2276 members, 137 advertisers, 142 exchanges, and 134 paid subscriptions from non-members. Several articles and editorials from the *Journal* have been reprinted, in whole or in part, in other medical publications, including the *Indian Medical Record*, *Revista de Radiologia y Fisioterapia*, *The Review of Tuberculosis of Havana*, numerous state journals and a good many books.

Thus it would seem, thanks to the editor and the assistant editor, both of whom are doing a grand job, the *Journal* is a very vital factor in medical literature. I have compared it with a good many other state journals and I can proudly say that it is equaled by very few and surpassed by none. As chairman of the editorial board, I wish to congratulate most heartily Dr. Johnson and his daughter, who have borne the burden and heat of the day in producing such a worthwhile publication.

PAUL H. RINGER, M.D.,
Chairman

GENERAL SESSIONS

FIRST GENERAL SESSION

Tuesday, May 4, 1948

The first general session of the ninety-fourth annual meeting of the Medical Society of the State of North Carolina convened in the ballroom of the Carolina Hotel at 9:15 a.m. and was called to order by the secretary-treasurer, Dr. Roscoe D. McMillan. Following the invocation by Dr. D. S. Currie of Parkton, Secretary McMillan presented the past presidents who were on the stage. He then turned the gavel over to the president, Dr. James F. Robertson of Wilmington.

Presentation of the Moore County Medical Society Medal

Dr. Robertson took the chair and called for the report of the Committee on Award of the Moore County Medal. In the absence of any members of this committee, Secretary McMillan presented the Moore County Medal to Dr. W. L. Thomas, associate professor of obstetrics and gynecology at the Duke University School of Medicine, for his paper entitled "Some Psychosomatic Problems in Gynecology," read before the Section on Obstetrics and Gynecology at the Ninety-Third Annual Session.

Report of the Obituary Committee

My task accomplished and the long day done,
So be my passing!
My wages taken, and in my heart
Some late lark singing,
Let me be gathered to the quiet west,
The sundown splendid and serene,
Death.

—Henley

It is fitting that we pause to pay tribute to the memory of our members who have entered "another golden chamber of the king's, larger than this we leave, and lovelier." Because they chose to give their lives in glorious service to their fellow man, hundreds of men, women and children in our state today are living a more abundant life. The value of such a spirit as theirs cannot be expressed in words. Their deeds rather are a memorial to them, a memorial graven, not on stone, but in the hearts of those to whom they ministered. We shall miss them, but we shall treasure the memory of their devotion beyond the call of duty. In deep humility we would give thanks to the Great Physician that ours is a profession like unto His own earthly ministry, and pray that His peace may abide in our hearts this day as we meet without our beloved president and fellow members whose long day's work is done.

Sunset and evening star,
And one clear call for me!
And may there be no moaning of the bar,
When I put out to sea,

But such a tide as moving seems asleep,
Too full for sound and foam,
When that which drew from out the boundless deep
Turns again home.

Twilight and evening bell,
And after that the dark!
And may there be no sadness of farewell,
When I embark;

For tho' from out our bourne of Time and Place
The flood may bear me far,
I hope to see my Pilot face to face
When I have crossed the bar.

—Tennyson

Let us stand now for the roll call of those who have died since we last met. At the close of the reading, let us remain standing a moment for meditation and silent prayer.

Dr. Charles Alexander Anderson
(Honorary Fellow)
Dr. Memory Ford Boyles
Dr. Tilman Carlisle Britt
Dr. Romulus Brown Butt
Dr. Alton Cook Campbell (Honorary Fellow)
Dr. William Wilhelm Craven (Honorary Fellow)
Dr. W. B. Crawford
Dr. O. F. Eckel (Honorary Fellow)
Dr. James William Farrior
Dr. Paul William Fetzer
Dr. Anna M. Gove (Honorary Fellow)
Dr. Locksley Samuel Hall
Dr. Frank Trumbo Harper, Jr.
Dr. Thomas Leck Helms
Dr. Caroline Lunetta Hilborn
Dr. Abel LeCompte Hill
Dr. Fairley Patterson James (Honorary Fellow)
Dr. Guy S. Kirby (Honorary Fellow)
Dr. William L. Kirkpatrick (Honorary Fellow)
Dr. Joseph R. Latham
Dr. William Marshall Love
Dr. Reuben A. MacBrayer
Dr. John Henry Martin (Honorary Fellow)
Dr. Neill Henry McLeod
Dr. L. D. McPhail (Honorary Fellow)
Dr. Henry Charles Menzies (Honorary Fellow)
Dr. Robert Bascom Miller (Honorary Fellow)
Dr. Robert J. Nelson (Honorary Fellow)
Dr. Luther Alpheus Nowell
Dr. Porter B. Orr (Honorary Fellow)
Dr. Wilson Pendleton
Dr. William Anthony Peters (Honorary Fellow)
Dr. Charles Hoover Phillips (Honorary Fellow)
Dr. Robert Franklin Quinn
Dr. William Perry Reaves (Honorary Fellow)
Dr. Phil C. Riley
Dr. Adin Adam Rucker (Honorary Fellow)
Dr. E. T. Sessoms (Honorary Fellow)
Dr. Frank Alexander Sharpe
Dr. Colin Shaw
Dr. Oliver William Shellem
Dr. Ellis Spainhour (Honorary Fellow)
Dr. Joseph Anderson Speed (Honorary Fellow)
Dr. Samuel Lanier Stringfield (Honorary Fellow)
Dr. H. C. Taylor
Dr. John Young Templeton
Dr. Landon D. Walker
Dr. Charles Manley Walters (Honorary Fellow)
Dr. Frank Livingston Whelpley
Dr. Richard Bidgood Whitaker (Honorary Fellow)
Dr. William Harry Woody
Dr. Robert U. Zimmerman (Honorary Fellow)

ARTHUR A. JAMES, JR., M.D.,
Chairman
C. R. MONROE, M.D.
M. D. BONNER, M.D.

Tribute to Dr. Sharpe

President Robertson called on Dr. Donald B. Koonce of Wilmington, who gave the following tribute to Dr. Frank Sharpe:

Dr. Koonce: This ninety-fourth annual session of the Medical Society of the State of North Carolina would not be complete without taking time to pay homage to our ninety-fourth president, Dr. Frank Sharpe. Dr. Sharpe died in his sleep November 21, 1947, in his seventh month of office as president of our Society, and in his fifty-eighth year of life. His life needs no eulogy from me and no reviewing of vital statistics. His many accomplishments and honors as a lay citizen, as well as a doctor, are well known to us all. All of us who knew him personally remember his inherent graciousness and ease as a host. All of us who knew him as a doctor remember his natural ability, kindness and discrimination. All of us who knew him as president of the North Carolina Medical Society remember his executive ability, his foresightedness, his planning and his high ideals. All of us who knew him remember him well.

His death was an unexpected and unforeseen tragedy. Only one other such instance has occurred in the history of the Medical Society. Dr. J. A. Burroughs died while in office as president in 1910.

It was with a realization of an immeasurable loss as well as a feeling of great sadness that the president-elect and the Executive Committee of this Society took over the reins and have attempted to carry on the work and ideals planned and partly executed by President Sharpe. It is thus with a deep sense of reverence that we pause now for a few moments in the midst of the pleasure of our annual meeting and the pride in our accomplishments to pay respect to the memory of the man to whom most credit for these accomplishments is due. Speaking directly for our president, Dr. Robertson, and as a member of your Executive Committee, I want to stress the fact that this has been Frank Sharpe's year and that this is Frank Sharpe's meeting.

In respect to Dr. Sharpe let us rise again and have about ten seconds of silent prayer.

Introduction of Speakers

... President Robertson presented Dr. William A. Wolff of Winston-Salem, who gave a paper entitled "The Control of Electrolyte and Water Balance in Surgical Patients."

Dr. Frank R. Lock of Winston-Salem was introduced and gave a "Report of Progress of the Maternal Welfare Committee" (published in the May issue of the *North Carolina Medical Journal*).

Secretary McMillan introduced Dr. R. E. Lapp of Washington, D. C., head of the Committee on Atomic Energy, Research and Development Board, who spoke on "Atomic Warfare and Medicine."

President Robertson presented Dr. John deJ. Pemberton, professor of surgery at the Mayo Foundation, Rochester, Minnesota. Dr. Pemberton gave a paper entitled "The Appraisal of the Present-Day Treatment of Hyperthyroidism."

Dr. Stuart Willis of McCain, superintendent of the North Carolina Sanatoria, spoke on "The Place of BCG Vaccination in the Tuberculosis Program."

A talk on "Physical Methods of Treatment in Psychiatry" (published in this issue) was given by Dr. William Sargent of England, visiting professor of neuropsychiatry at the Duke University School of Medicine.

The first general session was then declared adjourned.

BANQUET SESSION

Tuesday, May 4, 1948

The annual banquet of the Medical Society was held in the dining room of the Carolina Hotel, with Dr. Oren Moore of Charlotte acting as toastmaster.

Announcement of John Alexander McMillan Memorial Award

Following the presentation of guests, Dr. Moore called on Dr. J. B. Bullitt, chairman of the committee on the John Alexander McMillan Memorial Award for the best scientific exhibit presented by a member of the State Society at the annual meeting. Dr. Bullitt announced that the award went to Dr. W. M. Kelsey and Dr. R. B. Lawson of the Bowman Gray School of Medicine for their exhibit on Rocky Mountain spotted fever.

Tribute to Dr. Reynolds

Dr. H. W. Stevens, president of the North Carolina Public Health Association, was recognized, and paid the following tribute to Dr. Carl Reynolds, retiring State Health Officer.

Dr. Stevens: Dr. Reynolds, I, as president of the North Carolina Public Health Association, representing over eight hundred of your fellow workers and colleagues, wish to present you with a small token of appreciation for your capable leadership during the past fourteen years as our State Health Officer. We think you are not only the best State Health Officer our state has ever had, but also one of the best in our entire country.

Therefore, so that all of our future public health workers will remember your achievements in progressive public health leadership, we have ordered to be molded, cast and struck a gold medal, to be known as the Reynolds Medal, in your honor. This medal will be presented each year as an award for public health achievement to the author of the best paper or other public health matter presented to the North Carolina Public Health Association at its annual meeting.

Now, Dr. Reynolds, I wish to give you something personal which we hope you may enjoy many, many years. I have here a scroll from the North Carolina Public Health Association members which I wish to present to you for your untiring devotion to a job well done. On this scroll are deeply engraved your achievements, which are too numerous to mention.

We understand that you are soon to leave this state to go out to California to live. We wish you the happy and long life which you so richly deserve. Please accept our small token of appreciation.

Introduction of Guest Speaker

Mr. James H. Clark, chairman of the Medical Care Commission of North Carolina, was presented by Secretary McMillan, and read a paper entitled "Accomplishments of the N. C. Medical Care Commission."

Secretary McMillan: Mr. Toastmaster, I think the Medical Society of the State of North Carolina owes a great debt of gratitude to a man like Mr. Jim Clark, who has devoted this much time and this much energy to putting across a program that is going to do the people of the state of North Carolina more good and will reach more people than anything that has come to us in the last one hundred years.

I move you, sir, that we give a rising vote of thanks to Mr. Jim Clark.

... The audience rose and applauded. There followed the introduction of Mr. James E. Gheen of New York City, who presented a humorous and inspirational address. Thereafter, the session adjourned.

SECOND GENERAL SESSION

Wednesday, May 5, 1948

The second general session was called to order at 9 a.m. by the secretary-treasurer, Dr. Roscoe D. McMillan, who turned the gavel over to Dr. J. G. Raby, second vice president of the Society. Dr. Raby introduced the first two speakers—Dr. Jay M. Arena of Durham, who gave a paper on "Accidental Poisoning in Children," and Dr. Robert J. Reeves of Durham, who spoke on "Roentgenological Diagnosis of Carcinoma of the Stomach." Secretary McMillan then presented Dr. D. S. Currie, Jr., of Durham, who was escorted to the rostrum by his father, Dr. D. S. Currie, Sr., of Parkton. The subject of his paper, which was presented with slides, was "External Diseases of the Eye."

Following a talk on "The Need for and Recognition of the General Practitioner" by Dr. Wingate M. Johnson of Winston-Salem, the two guest speakers—Dr. Russel L. Haden, head of the Department of Medicine at the Cleveland Clinic, Cleveland, Ohio, and Dr. William F. Friedewald, chairman of the Department of Bacteriology of the Emory University School of Medicine, Atlanta, Georgia—were presented. Dr. Haden spoke on "The Treatment of Anemia," and Dr. Friedewald on "The Pathogenesis, Diagnosis, and Treatment of the Acute Phase of Poliomyelitis."

Presentation of the Winner of the 1948 High School Essay Contest

Dr. Donald B. Koonce, chairman of the Public Relations Committee, introduced Miss Amy Jean Wilson of Shelby, winner of the high school essay contest sponsored by the Public Relations Committee. Dr. Koonce presented Miss Wilson a scholarship to the University of North Carolina, and asked her to read her winning composition (published in the "Public Relations" section of this issue).

Election of Three Members of the Editorial Board of the North Carolina Medical Journal

President Robertson called for nominations for three members of the editorial board to take the place of Dr. Ernest Furgurson, Dr. Wingate Johnson, and Dr. Paul Ringer, whose terms expired in 1948. Dr. F. M. Houser of Cherryville moved that the three retiring members be re-elected. Dr. J. L. Winstead seconded the motion, and it was carried.

Dr. Robertson then declared the meeting adjourned.

CONJOINT SESSION, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA AND THE STATE BOARD OF HEALTH

Wednesday, May 5, 1948

The conjoint session of the State Board of Health and the Medical Society of the State of North Carolina was held in the ballroom of the Hotel Carolina at 12 noon on Wednesday. Dr. S. D. Craig of Winston-Salem, president of the State Board of Health, presided.

Dr. S. D. Craig: I feel that I speak the sentiments of the State Board of Health when I say that it is with a sense of sincere regret that we shall soon say "au revoir" to our retiring State Health Officer, Dr. Carl V. Reynolds. During his fourteen years'

tenure of office, Dr. Reynolds has brought credit to himself and honor to the state. His achievements in the field of public health have been many, indeed too many to enumerate in this brief expression. Perhaps the greatest honor that has come to him was his election as president of the State, Territorial and Provincial Health Authorities of the entire North American continent. Despite his accumulated honors, Dr. Reynolds has never been so busy that he has not been mindful of the needs of the individual. He served us well during a period that was not without its difficulties. He surmounted the many obstacles with that matchless sincerity of purpose which characterizes him. Though we regret the approaching departure of Dr. Reynolds, we feel that we have made a wise choice in the selection of Dr. J. W. Roy Norton as his successor. Dr. Norton's wealth of experience, his training and other excellent qualifications should enable him to chart a course that will be marked by continued advancement and progress. Now we will have the report of our secretary, Dr. Reynolds.

... Dr. Reynolds then presented his annual report, which was unanimously adopted.

Dr. Craig then introduced the members of the State Board of Health and Dr. Roy Norton, elected to succeed Dr. Reynolds as State Health Officer.

Dr. Norton: A man who puts on his armor and girds himself for battle should feel extremely humble in the presence of one who has fought valiantly and is ready to lay his armor aside. Dr. Reynolds has done a magnificent job. I feel that it is a great honor and privilege to try, as best I can, and with your help, to carry on the work.

There is one point that I want to make particularly, and that is that any report which we public health workers make represents only a fraction of the health work that is going on in North Carolina. The general practitioner, the private nurse, the hospital, the mother, the dentist, the farmer—all of the good citizens of the state are interested in and have an enormous investment in the public health work in this state. Every private practitioner has a stake in preventive medicine; his father worked for it, his grandfather worked for it, and if they hadn't done the job they did, we wouldn't be doing the job we are doing today. I realize that whatever can be accomplished will not be what I can do, but what all of us can do together. With that cooperation, with that interest, I am sure that we can keep up the good work that Dr. Reynolds and his coworkers have so nobly carried forward this far.

... There being no further business, the meeting was adjourned.

THIRD GENERAL SESSION

Wednesday, May 5, 1948

The last general session was held in the ballroom of the Hotel Carolina at 5 p.m. on Wednesday afternoon. President James F. Robertson presided. Secretary McMillan read the report of the Nominating Committee as adopted by the House of Delegates. Upon motion, duly made and seconded, the report was accepted.

Installation of New Officers

President Robertson: It gives me great pleasure to present to you at this time your president-elect, Dr. G. Westbrook Murphy of Asheville. Dr. Murphy has done most valuable work in the Society, and it gives me a great deal of pleasure to have him work with me this year.

Dr. Murphy: Mr. President and gentlemen, I am sure that the last thing you wish from me is a speech. May I say to you that never have I known

a man whom I admired and respected more than I did Dr. Paul P. McCain. Not so long ago he said to me that, although he had had many national honors, never had he prized anything more highly than the fact that he had been voted president of the Medical Society of the State of North Carolina, because in that case he had been elected by the people who knew him best. As I followed Dr. McCain in many other things, I should like to follow him in that sentiment now.

I want to say to you also that, although I am conscious that there are many problems, both at the national and at the state level, whose implications are frightful, and although I do not know the solution to even one of those problems, I know this—in organized medicine in North Carolina we have some very fine brains. I tell you that when the time comes I will call on those brains for all they are worth; I will use such intellect as I may have; and

I will give to the affairs of this Society my very best in time and effort.

You have honored me a great deal. I thank you. . . . Secretary McMillan escorted the first vice president, Dr. J. J. Combs of Raleigh, to the rostrum.

Dr. Combs: Mr. President and members of the Society, this is not only an unexpected but an undeserved honor. I want to tell you that I greatly appreciate it. Usually, I believe, a vice president is not supposed to do anything, but I will tell the Society and tell the president that I shall be glad to do anything I can to help him out this year.

. . . President Robertson then presented Dr. Joseph A. Elliott, second vice president, *in absentia*.

A motion to adjourn was seconded and carried, and Secretary McMillan declared the Ninety-Fourth Annual Session of the Medical Society of the State of North Carolina adjourned *sine die*.

BULLETIN BOARD

(CONTINUED FROM PAGE 386)

FALL POSTGRADUATE COURSES, AMERICAN COLLEGE OF CHEST PHYSICIANS

The Council on Postgraduate Medical Education of the American College of Chest Physicians is sponsoring three postgraduate courses in the latest developments in the specialty of diseases of the chest. Each of the courses will be of one week's duration and is open to all physicians. Tuition fee is \$50.00 for each course, and registration is limited to fifty physicians for the courses being presented in Chicago and New York City. Reservations will be accepted in the order received.

San Francisco, California, September 13 through 17, 1948. For information please write to Stacy R. Mettier, M.D., Head of Postgraduate Instruction, Medical Extension, University of California, San Francisco, California.

Chicago, Illinois, September 20 through 25, 1948.

New York City, November 8 through 12, 1948.

Applications for the courses to be given in Chicago and New York City should be made through the Executive Offices, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

MISSISSIPPI VALLEY MEDICAL EDITORS' ASSOCIATION

The fifth annual meeting of the Mississippi Valley Medical Editors' Association will be held at the Hotel Abraham Lincoln, Springfield, Illinois, on Sept. 29. This will probably be the last meeting under the above title, as the Association's purpose will be enlarged and its constitution revised at Springfield. In the afternoon, Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, will give a course in medical writing. There will be a fellowship hour, dinner and speakers in the evening.

The meeting will be held during the thirteenth annual convention of the Mississippi Valley Medical Society. All ethical physicians and those interested in medical writing are cordially invited. Non-members will be charged a small fee for the afternoon course in medical writing; there is no registration fee for the evening session. Write Harold Swanberg, M.D., Secretary, W.C.U. Bldg., Quincy, Illinois, for a complete program.

NATIONAL MEDICAL PUBLIC RELATIONS CONFERENCE

A national medical public relations conference, first of its kind, is to be held in St. Louis on November 27. Dr. George F. Lull, secretary-manager of the American Medical Association, announced the meeting, which his office will sponsor.

"Shooting at Common Targets in Medical Public Relations" is the theme of the conference, to which will be invited public relations directors, executive secretaries charged with public relations duties, and public relations committee chairmen from each of the forty-eight state medical societies.

Carefully selected discussion leaders from the state societies will grapple with these six major social issues facing the medical profession: selling the need of public relations to state medical society members, encouraging wider use of medical prepayment plans, setting up workable systems for handling night calls, the rebate problem, developing good-will with labor, farm, industrial and co-op groups, and cooperating with health agencies.

The conference will immediately precede the annual secretaries-editors meeting, which is being held in conjunction with the annual Interim Session of the American Medical Association, November 28 to December 3.

About one hundred representatives of state societies are expected to attend the sessions in St. Louis.

THE NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

Eight physicians, surgeons and therapists have been awarded scholarships for specialized training in cerebral palsy by the National Society for Crippled Children and Adults, Inc. This is the first national scholarship program established to meet the challenge of a crippling condition that disables some half-million Americans, the Society stated.

Lawrence J. Linck, the Society's executive director, revealed that the scholarships were made possible under the first of six \$5,000 yearly grants from Alpha Chi Omega, national women's sorority, which has adopted help to the cerebral palsied as its major national altruistic project. The scholarships will help meet the acute shortage of specialists trained in cerebral palsy, a disability of muscular control which results from damage to control centers in the brain.

The Medical Society of the State of North Carolina

OFFICERS, COMMITTEES and ROSTER OF FELLOWS

Alphabetical Listing and Roster by Counties

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Officers

OFFICERS 1947-1948

President—FRANK A. SHARPE, M.D.†, Greensboro
President-Elect—JAMES F. ROBERTSON, M.D., Wilmington
First Vice President—V. K. HART, M.D., Charlotte
Second Vice President—J. G. RABY, M.D., Tarboro
Secretary-Treasurer—ROSCOE D. McMILLAN, M.D. (1946-1949),
 Red Springs

† Died during term of office.

OFFICERS 1948-1949

President—JAMES F. ROBERTSON, M.D., Wilmington
President-Elect—G. WESTBROOK MURPHY, M.D., Asheville
First Vice President—JOSEPH J. COMBS, M.D., Raleigh
Second Vice President—JOSEPH A. ELLIOTT, M.D., Charlotte
Secretary-Treasurer—ROSCOE D. McMILLAN, M.D. (1946-1949),
 Red Springs

Executive Secretary—MR. JAMES T. BARNES, Raleigh

The president, secretary-treasurer, and executive secretary are members *ex officio* of all committees.

COUNCILORS 1946-1949

First District—ZACK D. OWENS, M.D., Elizabeth City
Second District—JOHN COTTEN TAYLOE, M.D., Washington
Third District—DONALD B. KOONCE, M.D., Wilmington
Fourth District—NEWSOM P. BATTLE, M.D., Rocky Mount
Fifth District—JOHN N. ROBERTSON, M.D., Fayetteville
Sixth District—MILLARD D. HILL, M.D., Raleigh
Seventh District—ELIAS S. FAISON, M.D., Charlotte
Eighth District—JAMES H. McNEILL, M.D., North Wilkesboro
Ninth District—IRVING E. SHAFER, M.D., Salisbury
Tenth District—DONALD M. McINTOSH, SR., M.D., Old Fort

SECTION CHAIRMEN 1948-1949

General Practice of Medicine and Surgery—AMOS N. JOHNSON, M.D.,
Garland
Ophthalmology and Otolaryngology—L. R. HEDGPETH, M.D., Lumberton
Practice of Medicine—R. Z. QUERY, JR., M.D., Charlotte
General Surgery—GEORGE L. CARRINGTON, M.D., Burlington
Pediatrics—J. ROBERT ADAMS, M.D., Charlotte
Gynecology and Obstetrics—FRANK R. LOCK, M.D., Winston-Salem
Public Health and Education—E. H. ELLINWOOD, M.D., Newton
Neurology and Psychiatry—JOHN S. MCKEE, JR., M.D., Morganton
Radiology—HENRY B. IVEY, M.D., Goldsboro
Pathology—

DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

ROSCOE D. McMILLAN, M.D. (1948-1950)	Red Springs
C. F. STROSNIDER, M.D. (1948-1950)	Goldsboro
ROSS S. McELWEE, M.D. (1948-1950)	Statesville
B. O. EDWARDS, M.D., Alternate	Asheville
W. M. COPPRIDGE, M.D., Alternate	Durham
G. GRADY DIXON, M.D., Alternate	Ayden

DELEGATES TO THE MEDICAL SOCIETY OF VIRGINIA
1948 MEETING

JOHN PAYNE, III, M.D.,	Sunbury
MOIR S. MARTIN, M.D.,	Mt. Airy
E. W. FURGURSON, M.D.,	Plymouth

DELEGATES TO THE MEDICAL ASSOCIATION OF
SOUTH CAROLINA, 1949 MEETING

L. R. HEDGPETH, M.D.,	Lumberton
D. B. KOONCE, M.D.	Wilmington
CLAUDE SQUIRES, M.D.	Charlotte

DELEGATES TO THE MEDICAL ASSOCIATION OF GEORGIA
1949 MEETING

JOHN R. BENDER, M.D.	Winston-Salem
ELIAS FAISON, M.D.	Charlotte
N. O. BENSON, M.D.	Lumberton

DELEGATES TO THE TENNESSEE STATE MEDICAL
ASSOCIATION, 1949 MEETING

J. H. McNEILL, M.D.	North Wilkesboro
JULIAN MOORE, M.D.	Asheville
V. H. DUCKETT, M.D.	Canton

COMMITTEES, 1948-1949

Committee to work with the North Carolina Industrial Commission to evolve a satisfactory plan for the administration of the medical provisions of the Workmen's Compensation Act.

G. Westbrook Murphy, M.D., Chairman.....	Asheville
Hugh A. Thompson, M.D.....	Raleigh
Rowland T. Bellows, M.D.....	Charlotte
Verne S. Caviness, M.D.....	Raleigh
Thomas R. Huffines, M.D.....	Asheville

Committee on Child Welfare

Arthur H. London, Jr., M.D., Chairman.....	Durham
Frederick B. Haar, M.D.....	Greenville
Jasper S. Hunt, M.D.....	Charlotte

Advisory Committee to Auxiliary

Rachel D. Davis, M.D., Chairman.....	Kinston
William E. Baldwin, Jr., M.D.....	Whiteville
Olivia Abernethy, M.D.....	Elkin

Cancer

T. Leslie Lee, M.D., Chairman.....	Kinston
L. P. Williams, M.D.....	Edenton
H. B. Ivey, M.D.....	Goldsboro
Ivan M. Procter, M.D.....	Raleigh
Robert P. Morehead, M.D.....	Winston-Salem
Edward McG. Hedgpeth, M.D.....	Chapel Hill
Hugh A. McAllister, M.D.....	Lumberton
A. M. Oelrich, M.D.....	Sanford
B. W. McKenzie, M.D.....	Salisbury
Monroe T. Gilmour, M.D.....	Charlotte
Forrest M. Houser, M.D.....	Cherryville
E. W. Schoenheit, M.D.....	Asheville

Finance

V. M. Hicks, M.D., Chairman.....	Raleigh
Wayne J. Benton, M.D.....	Greensboro
William D. James, M.D.....	Hamlet

Hospitals

Harry L. Brockmann, M.D., Chairman.....	High Point
Frederic C. Hubbard, M.D.....	North Wilkesboro
Harry L. Johnson, M.D.....	Elkin

Industrial Health

Harry Winkler, M.D., Chairman.....	Charlotte
C. B. Davis, M.D.....	Wilmington
Hugh A. Matthews, M.D.....	Canton

Legislation

Millard D. Hill, M.D., Chairman.....	Raleigh
Hubert B. Haywood, M.D., Advisory Chairman	Raleigh
Joseph J. Combs, M.D.....	Raleigh
George W. Paschal, M.D.....	Raleigh

Advisory Committee to the North Carolina Medical Care Commission

Harry L. Brockmann, M.D., Chairman.....	High Point
Zack D. Owens, M.D.....	Elizabeth City
Jacob H. Shuford, Jr., M.D.....	Hickory

Committee to confer with the North Carolina Hospital Association, North Carolina Hospital Saving Association and North Carolina Hospital Care Association on the merger of Hospital Saving and Hospital Care

George L. Carrington, M.D., Chairman.....	Burlington
Arthur H. London, Jr., M.D.....	Durham
David T. Smith, M.D.....	Durham

Mental Hygiene

Allyn B. Choate, M.D., Chairman.....	Charlotte
David A. Young, M.D.....	Raleigh
Lloyd J. Thompson, M.D.....	Winston-Salem
John F. Owen, M.D.....	Raleigh
R. Burke Suitt, M.D.....	Durham
H. R. Parker, M.D.....	Greensboro
Leslie B. Hohman, M.D.....	Durham
Mark A. Griffin, M.D.....	Asheville

Moore County Medal Award

David R. Murchison, M.D., Chairman.....	Wilmington
R. Beverly Raney, M.D.....	Durham
Edward W. Phifer, M.D.....	Morganton

Obituary

Claiborne T. Smith, M.D., Chairman.....	Rocky Mount
Herbert H. Ogburn, M.D.....	Greensboro
Heyward C. Thompson, M.D.....	Shelby

Postgraduate Medical Study

W. Reece Berryhill, M.D., Chairman.....	Chapel Hill
Wilburt C. Davison, M.D.....	Durham
Coy C. Carpenter, M.D.....	Winston-Salem

Publication

Roscoe D. McMillan, M.D., Chairman.....	Red Springs
Wingate M. Johnson, M.D., Secretary.....	Winston-Salem
Ernest W. Furgurson, M.D.....	Plymouth
John B. Graham, M.D.....	Chapel Hill
George T. Harrell, M.D.....	Winston-Salem
Paul H. Ringer, M.D.....	Asheville
Hubert A. Royster, M.D.....	Raleigh
Josiah C. Trent, M.D.....	Durham

Public Relations

Donald B. Koonce, M.D., Chairman.....	Wilmington
John S. Rhodes, M.D.....	Raleigh
Amos N. Johnson, M.D.....	Garland
Charles F. Strosnider, M.D.....	Goldsboro

Tuberculosis

Henry S. Willis, M.D., Chairman.....	McCain
Paul A. Yoder, M.D.....	Winston-Salem
Hillis L. Seay, M.D.....	Huntersville
Claude C. Milham, M.D.....	Hamlet

Scientific Work

Roscoe D. McMillan, M.D., Chairman.....	Red Springs
Lenox D. Baker, M.D.....	Durham
George T. Harrell, M.D.....	Winston-Salem

**Liaison Committee on Insurance to work with
North Carolina Insurance Commission**

W. Edwin Miller, M.D., Chairman.....Whiteville
Harold S. Clark, M.D.....Asheville
J. Rush Shull, M.D.....Charlotte

**Conference Committee on Crime and Psychiatry and
Coroner System, cooperating with North Carolina
Bar Association**

James B. Bullitt, M.D., Chairman.....Chapel Hill
Maurice H. Greenhill, M.D.....Durham
Wiley D. Forbus, M.D.....Durham

Maternal Welfare

Frank R. Lock, M.D., Chairman.....Winston-Salem
Ernest W. Franklin, M.D.....Charlotte
George O. Moss, M.D.....Cliffside
Robert A. Ross, M.D.....Durham
George M. Cooper, M.D.....Raleigh
Ivan M. Procter, M.D.....Raleigh
T. Leslie Lee, M.D.....Kinston
C. J. Powell, M.D.....Wilmington
J. Street Brewer, M.D.....Roseboro

**Committee to Collaborate with the National
Physicians Committee**

George L. Carrington, M.D., Chairman.....Burlington
G. Westbrook Murphy, M.D.....Asheville
Arthur L. Daughtridge, M.D.....Rocky Mount

**Physician Members of the North Carolina
Medical Care Commission**

Frederic C. Hubbard, M.D., Chairman.....North Wilkesboro
J. Street Brewer, M.D.....Roseboro
W. M. Coppridge, M.D.....Durham

Rural Health and Medical Care

Frederic C. Hubbard, M.D., Chairman.....North Wilkesboro
W. Reece Berryhill, M.D.....Chapel Hill
Millard D. Hill, M.D.....Raleigh

**Committee to work in conjunction with Hospital
Saving Association to familiarize the doctors of
the state with the requirements of the Veterans
Administration**

Edward McG. Hedgpeth, M.D., Chairman.....Chapel Hill
Everett I. Bugg, Jr., M.D.....Durham
James H. McNeill, M.D.....North Wilkesboro

**Committee to develop plan of prepayment hospital
and medical service voluntary insurance**

Verling K. Hart, M.D., Chairman.....Charlotte
Howard H. Bradshaw, M.D.....Winston-Salem
M. Barnes Woodhall, M.D.....Durham
John S. Rhodes, M.D.....Raleigh
Robert A. White, M.D.....Asheville
Horace G. Strickland, M.D.....Greensboro
James B. Sidbury, M.D.....Wilmington
Paul F. Whitaker, M.D.....Kinston

Julian E. J. Jacobs, M.D.....Charlotte
David G. Welton, M.D.....Charlotte
Corbett E. Howard, M.D.....Goldsboro
J. Street Brewer, M.D.....Roseboro
Kenneth L. Pickrell, M.D.....Durham

**Committee to Arrange Facilities for
Annual Sessions**

Roscoe D. McMillan, M.D., Chairman.....Red Springs

**Committee to Cooperate with the North Carolina
Dental Society**

B. O. Edwards, M.D., Chairman.....Asheville
Samuel E. Warshauer, M.D.....Wilmington
Julian Busby, M.D.....Kannapolis

**Committee to investigate the scarcity of physicians
in the state and report a practical program of
medical education to 1949 House of Delegates**

Richard B. Davis, M.D., Chairman.....Greensboro
James H. McNeill, M.D.....North Wilkesboro
David J. Rose, M.D.....Goldsboro

**Committee to cooperate with the University of
North Carolina authorities with reference to the
selection of the Medical School Faculty**

James F. Robertson, M. D., Chairman.....Wilmington
William M. Coppridge, M.D.....Durham
Brockton R. Lyon, M.D.....Greensboro
James B. Sidbury, M.D.....Wilmington
Arthur H. London, M.D.....Durham
Oren Moore, M.D.....Charlotte
Ivan M. Procter, M.D.....Raleigh
Hugh A. Thompson, M.D.....Raleigh
James H. Cherry, M.D.....Asheville
Verling K. Hart, M.D.....Charlotte
Shahane R. Taylor, M.D.....Greensboro
Monroe T. Gilmour, M.D.....Charlotte
David R. Murchison, M.D.....Wilmington
Russell O. Lyday, M.D.....Greensboro
G. Westbrook Murphy, M.D.....Asheville
Henry B. Ivey, M.D.....Goldsboro
W. Edwin Miller, M.D.....Whiteville
Amos N. Johnson, M.D.....Garland
William A. Sams, M.D.....Marshall
Hamilton W. McKay, M.D.....Charlotte
Fred M. Patterson, M.D.....Greensboro

Committee on Emergency Medical Service

David Caver, M.D., Chairman.....Winston-Salem
Graham B. Barefoot, M.D.....Wilmington
Ivan W. Brown, M.D.....Durham
James W. Tankersley, M.D.....Greensboro

McCain Memorial

Paul F. Whitaker, M.D., Chairman.....Kinston
Frederic C. Hubbard, M.D.....North Wilkesboro
William M. Coppridge, M.D.....Durham

Venereal Disease

Fred G. Pegg, M.D., Chairman.....Winston-Salem
Millard B. Bethel, M.D.....Charlotte
Malcolm T. Foster, M.D.....Fayetteville

ALPHABETICAL LIST OF FELLOWS FOR 1948 WITH POSTOFFICE ADDRESSES

The number in small type following each name indicates the county society under which the Fellow is listed in the roster by counties.

A key to specialties is to be found at the end of the alphabetical list.

Honorary Members

Janet Alexander, M.D., American Mission—Montgomery, West Punjab, Pakistan
Paul V. Anderson, M.D.——Richmond, Va.
†William Seaman Bainbridge, M.D.——New York
James K. Hall, M.D.——Richmond, Va.
Stuart McGuire, M.D.——Richmond, Va.
R. L. Payne, Jr., M.D.——Norfolk, Va.
Fred W. Rankin, M.D.——Lexington, Ky.
William Sharpe, M.D.——New York

Fellows and Honorary Fellows

*Abernethy, Olivia, GP 69——Elkin
*Abernethy, Paul McBee⁶⁵——Rutherfordton
Adair, William Edward, GP 34——Erwin
Adams, Anne Stephenson, GP 25——Concord
Adams, Carlton Noble, ObG 25——Winston-Salem
*Adams, Fletcher Ruff, PH 10——Concord
Adams, James Robert, Pd 49——Charlotte
Adams, R. K., PN 9——Morganton
Ader, Otis Ladeau, PH 25——Walkertown
Adkins, T. F., ObG 23——Durham
Alexander, George Thomas, GP 21——Thomasville
Alexander, James Moses, I 49——Charlotte
Alexander, James Ramsay (Hon.) 49——Charlotte
Alexander, Sydenham B., I 23——Richmond, Va.
Allen, Charles Insley, S 2——Wadesboro
Allen, George Calvin, OALR 62——Lumberton
Allen, Joseph A. (Hon.), GP 68——New London
Allgood, John W., I 32——Greensboro
Allgood, Reese Alexander (Hon.), GP 20——Fayetteville
Alyea, Edwin Paschal, U 23——Durham
Ambler, Arthur Chase, Anes 8——Asheville
Anders, McTyeire Gallant (Hon.), Pd 27——Gastonia
*Anderson, Elbert Carl, Oph 52——Wilmington
Anderson, Irene, P 52——Wrightsville Beach
*Anderson, John Bascom, GP 8——Asheville
Anderson, Katherine, Pd 25——Winston-Salem
Anderson, Norman LaRue 8——Black Mountain
Anderson, Richard Speight, S 24——Whitakers
*Anderson, William Banks, OALR 23——Durham
*Andrew, John Montgomery, R 21——Lexington
Andrew, Lacey Allen, Jr., U 25——Winston-Salem
Andrews, Edward David 49——Charlotte
Andrews, G. A., OALR 61——Hamlet
Andrews, Vernon L., GP 68——Mt. Gilead
Angel, Edgar, S 45——Franklin
Angel, Furman, S 45——Franklin
Anthony, James Edward (Hon.), GP 17——Kings Mountain
Anthony, William Augustus, GP 27——Gastonia
Antonakos, Theodore, S 32——Greensboro
Apple, Elbert Dwight, R 32——Greensboro
*Arena, Jay Morris, Pd 23——Durham
Armentrout, Charles H., I 8——Asheville
*Armistead, Drury Branch, I 58——Greenville
Armstrong, Charles Wallace (Hon.), PH 64——Salisbury
Arney, William Charles, GP 9——Morganton
*Arnold, Ralph Aranovitz, OALR 23——Durham
Ashby, Edward Clayton (Hon.), S 69——Mt. Airy
Ashby, Julian Warrington, PN 73——Raleigh
*Ashe, John Rainey (Hon.), Pd 48——Charlotte
*Ashford, Charles Hall, GP 19——New Bern

*Atkins, Stanley Sisco, Or 8——Asheville
*Ausband, John Rufus, GP 21——Denton
Austin, DeWitt Ray, P&U 49——Charlotte
Austin, Frederick Da Costa, Jr., S&U 49——Charlotte
*Avery, Edward Stanley, I 25——Winston-Salem
*Aycock, Edwin Burtis, GP 58——Greenville
*Aycock, Francis Marion, GP 41——Princeton
*Ayers, James Salisbury, GP 66——Clinton
*Bacon, Harold Lyle 40——Bryson City
Bailey, C. Fletcher, GP 56——Elizabeth City
*Bailey, Clarence Whitfield, OALR 24——Rocky Mount
Bailey, Harmon J., ObG 8——Asheville
Bailey, Hilda H., GP 4——Banner Elk
Bailey, Joseph P. 36——Hendersonville
Bailey, M. H. 56——Elizabeth City
Bain, Eugene A., PH 32——Greensboro
*Baird, Harry Haynes, U 48——Charlotte
Baker, Horace Mitchell, Jr., S 62——Durham
*Baker, Lenox Dial, Or 23——Durham
*Baker, Thomas Williams, I 49——Charlotte
*Baldwin, William E., Jr. 18——Whiteville
Ballard, Claude H., GP 43——Kinston
Ballou, James Larkin, Oph 3——Grassy Creek
Bandy, William Gaither (Hon.), GP 44——Lincolnton
Bangle, James Alexander, GP 10——Concord
Banner, Charles Whitlock (Hon.), OALR 32——Greensboro
Barbee, George S. (Hon.), GP 73——Zebulon
Barber, John F. 8——Asheville
Barder, Robert L., GP 11——Lenoir
Bardin, Robert Malcolm, GP 77——Wilson
*Barefoot, Graham Ballard, Path & R 52——Wilmington
*Barefoot, Sherwood W. 32——Greensboro
Barefoot, William Frederick, S 52——Wilmington
*Barham, Berlin Francis, GP 60——Asheboro
*Barker, Christopher Sylvanus, GP 19——New Bern
Barkwell, John H., GP 56——Weeksville
Barnes, Henry Eugene, Jr., C 13——Hickory
Barnes, Jesse Thomas, S 60——Asheboro
Barnes, Margaret A., P 49——Charlotte
Barnes, Tiffany, GP 60——Asheboro
*Barnhardt, Albert Earl, GP 10——Kannapolis
Barrett, John Milton, Ob 58——Greenville
Barrier, Henry Webster, PN 10——Concord
Barringer, Archie L., GP 10——Mt. Pleasant
Barringer, Phil L., GP 13——Hickory
*Barron, Archibald Alexander (Hon.), PN 49——Charlotte
*Basnight, Thomas Gray (Hon.), GP 58——Greenville
Bass, Beaty Lee, S 65——Rutherfordton
*Bass, Harris Hartwell, Ob 72——Henderson
*Bass, R. E., GP 18——Chadbourn
Bass, Spencer Pippin (Hon.), GP 24——Tarboro
*Battle, Margaret White, ObG 24——Rocky Mount
*Battle, Newsom Pittman, S 24——Rocky Mount
Baxley, Raiford D., S 23——Durham
*Baxter, Oscar Dixon, R 49——Charlotte
*Baylin, George Jay, R 23——Durham
Beach, William R., GP 63——Madison
Beale, Seth McPherson, GP 69——Elkin
Beall, Louis Girardeau (Hon.), NP 9——Morganton

* Present at 1948 meeting.

† Deceased.

*Beall, Lawrence Lincoln, S ³²	Greensboro	Block, Milton Edward, GP ²¹	Lexington
Beam, Hugh Martin, GP ⁵⁷	Roxboro	Blowe, Ralph Boyd, GP ³³	Weldon
*Beasley, Edward Bruce (Hon.), GP ⁵⁸	Fountain	*Blue, Waylon, GP ⁴²	Jonesboro
Beaver, Charles L., S ³²	Greensboro	Blumberg, Alfred, Path ⁸	Atlanta, Ga.
Beaver, William Olive, GP ³²	Greensboro	Boehm, Emil, P ⁹	Morganton
Beavers, James Wallace, GP ²⁵	Kernersville	Boice, Edmund Simpson (Hon.), S ²⁴	Rocky Mount
Beckwith, Robert Payne (Hon.), Pd ³³	Roanoke Rapids	Bolt, Conway Anderson, GP ⁷¹	Marshville
Belcher, Cecil Cullen, U ⁸	Asheville	Bolus, Michael, D ⁷³	Raleigh
Belding, Helen, I ²⁵	Winston-Salem	Bond, George F., GP ³⁶	Bat Cave
Belk, George W. ²⁷	Gastonia	Bond, John P., S ²⁷	Gastonia
Bell, Andrew E. (Hon.) GP ³⁹	Mooreville	Boney, Elwood Rantz, I ⁴³	Kinston
Bell, Felix Ortan, GP ¹	Burlington	Bonner, John Bryan, GP ⁵	Aurora
Bell, George Erick, ObG ⁷⁷	Wilson	Bonner John Bryan Havens, T ⁵⁶	Elizabeth City
Bell, L. Nelson, S ⁸	Asheville	*Bonner, Kemp Plummer Battle (Hon.), Pd ¹²	Morehead City
Bell, Orville Earl, GP ²⁴	Rocky Mount	*Bonner, Merle Dumont, T ³²	Jamestown
Bell, Spencer Alexander, GP ⁶⁹	Hamptonville	*Bonner, Octavius Blanchard, OALR ³²	High Point
Bellamy, Robert Hartlee (Hon.), GP ⁵²	Wilmington	Booker, Edward Nelson, GP ⁴¹	Selma
Bellows, Rowland Thompson, NS ⁴⁹	Charlotte	*Boone, William Henry (Hon.), GP ²³	Durham
Belton, Joseph Franklin (Hon.), GP ²⁵	Winston-Salem	Boone, William Waldo, GP ²³	Durham
Benbow, Edgar Vernon, S ²⁵	Winston-Salem	*Bost, Thomas Creasy, S ⁴⁹	Charlotte
Benbow, John Thomas, GP ²⁵	Winston-Salem	Bostic, William Chivous (Hon.), Ind ⁶⁵	Forest City
*Bender, John Joseph, GP ⁶²	Red Springs	Bostic, William Chivous, Jr. ⁶⁵	Forest City
*Bender, John Robert, GP ²⁵	Winston-Salem	*Bowen, James Poore, S ⁵¹	Aberdeen
Bennett, Basil, P ⁸	Asheville	*Bowers, Marvin Arthur (Hon.), GP ²⁵	Winston-Salem
*Bennett, Ernest Claxton, GP ⁶²	Elizabethtown	Bowles, Francis Norman, ObG ²³	Durham
Bennett, Joseph Hammond (Hon.), GP ²	Wadesboro	*Bowman, Earle Ledbetter (Hon.), GP ⁶²	Lumberton
Bennett, P. R. ⁴⁰	Bryson City	*Bowman, Hugh Edgar (Hon.), GP ⁵¹	Aberdeen
Bennett, William Lewis, GP ⁵⁰	Burnsville	*Boyce, O. D., ObG, ²⁷	Gastonia
Benson, Norman Oliver, U ⁶²	Lumberton	*Boyette, Dan P., Pd ⁴³	Kinston
Bentley, James Gordon, GP ⁷⁶	Moravian Falls	Brabson, John Anderson, S ⁴⁹	Charlotte
Benton, George Ruffin, Sr. (Hon.) ⁷⁵	Fremont	*Brackett, William Ernest, OALR ³⁶	Hendersonville
Benton, George Ruffin, Jr. ⁷⁵	Goldsboro	Braddy, Wade Hampton (Hon.), GP ¹	Burlington
*Benton, Wayne Jefferson, GP ³²	Greensboro	Bradford, George Edwin, ALR ²⁵	Winston-Salem
Berry, James William, GP ⁵⁰	Bakersville	Bradford, Wallace Brown, ObG ⁴⁹	Charlotte
*Berryhill, Walter Reece, I & Ed ²³	Chapel Hill	Bradford, Williamson Ziegler, ObG ⁴⁹	Charlotte
Bertling, Marion Henry, ObG ³²	Greensboro	Bradley, John D., P ⁸	Asheville
*Best, Deleon Edward, C ⁷⁵	Goldsboro	*Bradshaw, Howard Holt, S ²⁵	Winston-Salem
*Best, Glenn Eben, GP ⁶⁶	Clinton	Bradshaw, Thomas Gavin, GP ⁷⁷	Wilson
Best, Henry Blount (Hon.), GP ⁷⁷	Wilson	Bradsher, James Sidney, I ³⁰	Stovall
*Bethel, Millard Bainbridge, PH ⁴⁹	Charlotte	*Brady, Charles Eldon, GP ⁵¹	Robbins
Biggs, John Irvin, S ⁶²	Lumberton	*Branaman, Guy Hewitt, ObG ⁷³	Raleigh
Biggs, Montgomery Herman (Hon.), S ⁶⁵	Rutherfordton	Brandon, Henry Allen, GP ⁶⁹	Yadkinville
Bigham, Roy Stinson, Jr., I ⁴⁹	Charlotte	Brandon, Wesley Otis, GP ¹⁰	Concord
*Billings, Gilbert M., OALR ⁹	Morganton	Brandon, William R., OALR ³⁹	Statesville
*Bird, Ignacio ³²	Greensboro	Brantley, Hassell (Hon.), OALR ²⁴	Spring Hope
*Bitting, Numa Duncan (Hon.), S ²³	Durham	Brantley, Julian Chisholm, GP ²⁴	Spring Hope
*Bittinger, Charles Lewis ³⁹	Mooreville	Brantley, J. C., Jr., ObG ²⁴	Rocky Mount
*Bittinger, Samuel Moffett, T ⁸	Oteen	Brantley, Thomas H., U ¹⁰	Concord
*Bizzell, Marcus Edward, OALR ⁷⁵	Goldsboro	Bray, Thomas Latham, I ⁴⁷	Plymouth
*Bizzell, Thomas Malcolm (Hon.), GP ⁷⁵	Goldsboro	*Breedon, William Henry, Pd ²⁰	Fayetteville
*Black, George William, GP ⁴⁹	Charlotte	Brenizer, Addison Gorgas (Hon.), S ⁴⁹	Charlotte
Black, John Riley, Jr., GP ¹⁸	Whiteville	*Brewer, James Street, GP ⁶⁶	Roseboro
Black, Kyle, S ⁶⁴	Philadelphia, Pa.	*Brewton, William Allan, Ind ⁸	Enka
Black, Oscar Reid (Hon.), GP ⁶⁴	Landis	*Brian, Earl Winfrey, I ⁷³	Raleigh
*Black, Paul Adrian Lawrence ⁵²	Wilmington	*Bridger, Dewey Herbert, GP ⁷	Bladenboro
Blackshear, Thomas Joseph, OALR ⁷⁷	Wilson	*Bridges, Dwight Thomas, GP ¹⁷	Lattimore
Blackwelder, R. G., NP ⁷³	Raleigh	*Briggs, Henry Harrison, Oph ⁸	Asheville
Blackwelder, Verne Hamilton, S ¹¹	Lenoir	*Brinkhous, Kenneth M., Ed ²³	Chapel Hill
†Blair, Andrew I ⁴⁹	Charlotte	Brinn, Thomas Preston, GP ¹⁶	Hertford
Blair, James Luther, ObG ²⁷	Gastonia	*Bristow, Charles Oliver, Pd ⁶¹	Rockingham
Blair, J. Samuel, Ob ²⁷	Gastonia	Britt, James Norment, GP ⁶²	Lumberton
Blalock, Burman Karl, GP ⁴⁹	Charlotte	Brock, Mary, Pd ⁵²	Wilmington
Blanchard, Irvin T., GP ⁵⁶	Elizabeth City	*Brockmann, Harry Lyndon, S ³²	High Point
Blanchard, Thomas W., GP ²⁸	Hobbsville	*Brooks, Ernest Bruce, I ²⁵	Winston-Salem
*Bland, Charles Atlas, GP ²⁶	Louisburg	*Brooks, Fred Philips, I ⁵⁸	Greenville
Bliss, Forrest Edgar, S ¹⁷	Lawndale	Brooks, Harry Eskridge, GP ⁴¹	Clayton

Present at 1948 meeting.

† Deceased.

- *Brooks, Ralph Elbert, U¹ Burlington
 Brookshire, Harley Gaskill
 (Hon.), GP⁸ Asheville
 Broughton, Arthur Calvin, Jr., GP⁷³ Raleigh
 *Broun, Matthew Singleton,
 OALR³³ Roanoke Rapids
 *Brouse, I. E., R⁵² Wilmington
 *Brown, Charles W.⁶¹ Hamlet
 Brown, Clarence Emanuel, GP⁶⁴ Faith
 Brown, E. M. (Hon.), GP⁵ Washington
 Brown, Frank Reid, I³² Greensboro
 Brown, George W. (Hon.), GP³⁸ Raeford
 Brown, Ivan W., Jr., S²³ Durham
 Brown, James Arthur, Ob⁶⁴ Cleveland
 Brown, James Stevens, Sr.,
 (Hon.), GP³⁶ Hendersonville
 Brown, Kermit English, ObG⁸ Asheville
 Brown, Landis Gold, S⁵² Southport
 Brown, Victor Emanuel, I&S⁴⁷ Williamston
 *Brown, William Moye Benjamin,
 ALR⁵⁵ Greenville
 Brown, Winfred Earl, P⁹ Banner Elk
 Brownsberger, Ethel May GP⁸ Biltmore
 *Brunson, Edward Porcher, S⁶⁸ Albemarle
 Bryan, A. Hughes, I²³ Chapel Hill
 Bryan, Lorenzo Dow (Hon.)
 GP⁵⁴ Sneads Ferry
 Buchanan, Luther Thomas
 (Hon.), GP⁶⁷ Laurinburg
 Buckner, James Marion (Hon.), S⁸ Swannanoa
 Buffalo, J. S. (Hon.), GP⁷³ Garner
 *Bugg, Charles Richard, Pd⁷³ Raleigh
 *Bugg, E. I., Jr., Or²³ Durham
 *Buie, Roderick Mark, PH³² Greensboro
 *Bulla, Alexander Chester
 (Hon.), PH⁷³ Raleigh
 *Bullitt, James Bell (Hon.), Path²³ Chapel Hill
 *Bullock, Duncan Douglas, GP⁶² Rowland
 *Bumgarner, John Reid⁷⁶ N. Wilkesboro
 Bunch, Charles, S⁴⁹ Charlotte
 *Bundy, James B., GP⁴³ La Grange
 Bundy, William Lumsden, ⁷⁶ N. Wilkesboro
 Bunn, J. J.¹⁰ Mt. Pleasant
 Bunn, Richard Wilmot, I²⁵ Winston-Salem
 Burdette, F. McP., GP&S⁵² Southport
 Burleson, William Brown (Hon.) GP⁴ Plumbtree
 Burnett, Thomas J. M., GP⁸ Black Mountain
 Burns, Joseph Eugene, Pd¹⁰ Concord
 Burt, Samuel Perry (Hon.), GP²⁶ Louisville
 Burton, Claude Naylor, ObG⁸ Asheville
 *Burwell, John Cole, Jr., ObG³² Greensboro
 Burwell, Walter Brodie, I²³ Henderson
 *Busby, George Francis, S⁶⁴ Salisbury
 *Busby, Julian, GP¹⁰ Kannapolis
 Busby, Julian Goode (Hon.), Pr&D⁶⁴ Salisbury
 *Butler, Leroy Jefferson, Pd²⁵ Winston-Salem
 *Byerly, C. H., GP¹⁴ Siler City
 *Byerly, James Hampton, GP⁴² Sanford
 Byerly, Wesley Grimes, OALR¹¹ Lenoir
 Bynum, C. C., GP⁵ Belhaven
 *Byrd, Charles W., GP³⁴ Dunn
 *Byrd, William Carey, T³⁸ McCain
 Byrnes, Thomas Henderson, Path⁴⁹ Charlotte
 Calder, Duncan Graham, Jr., S¹⁰ Concord
 *Caldwell, D. G., T¹⁰ Concord
 Caldwell, Lawrence McClure, GP¹³ Newton
 Caldwell, Robert Manfred, Ob⁶⁹ Mt. Airy
 Callaway, Jasper Lamar, D²³ Durham
 *Camp, Horton, GP¹⁴ Pittsboro
 *Cannon, Eugene Bolivia⁶⁰ Asheboro
 Cardwell, D. Willard, I³² Greensboro
 Carlton, Romulus Lee (Hon.),
 PH²⁵ Winston-Salem
 Carlyle, John Bethune, Ind¹ Burlington
 *Carpenter, Coy Cornelius,
 Path & Ed²⁵ Winston-Salem
 Carr, Catherine C., GP⁸ Biltmore
 Carr, Eugene Morrison, I⁸ Asheville
 *Carrington, George Lunsford, S¹ Burlington
 Carrington, Samuel Macon, S³⁰ Oxford
 Carroll, Fountain Williams, GP³¹ Hookerton
 Carroll, R. Charman, PN²³ Durham
 Carter, Francis Bayard, ObG²³ Durham
 Carter, Paul Conway, GP⁶³ Madison
 Carter, Warren Dallas, PH² Wadesboro
 Casstevens, John Claude, GP²⁵ Winston-Salem
 Casteen, Kenan, OALR⁶³ Leaksville
 Castellow, Cola, S⁶ Windsor
 Cater, Clinton Duncan, Ob³² Greensboro
 *Cathell, Edwin Jennings, S²¹ Lexington
 Cathell, James Luther, S²¹ Lexington
 Caveness, William F., N⁷³ Raleigh
 Caveness, Zebulan Marvin (Hon.), Pr⁷³ Raleigh
 Cavinness, Verne Strudwick, I⁷³ Raleigh
 Cayer, David GE²⁵ Winston-Salem
 *Cekada, Emil Bogomir, I²³ Durham
 *Chamblee, John S., PH²⁴ Nashville
 *Chandler, E. T., GP⁵⁴ Richlands
 Chandler, Weldon P., GP⁸ Weaverville
 Chaplin, Steenie Charles, GP⁴⁷ Columbia
 Chapman, Edwin James, ALR⁸ Asheville
 Chastain, Loren Lee, GP⁶⁵ Cliffside
 *Cherry, James Henderson, Or⁸ Asheville
 Chesson, Andrew L., S⁷³ Raleigh
 *Chester, Pinkney Jones, OALR⁵¹ Southern Pines
 Choate, Allyn Blythe, I⁴⁹ Charlotte
 Choate, Glenn⁶⁴ Salisbury
 Choate, James Walter, GP⁶⁴ Salisbury
 Clapp, Hubert Lee, GP⁸ Swannanoa
 *Clark, Badie Travis, S⁷⁷ Wilson
 Clark, DeWitt Duncan, GP⁷ Clarkton
 Clark, Harold Stevens, S⁸ Asheville
 *Clark, Lintner, R⁷³ Raleigh
 *Clark, Milton Stephen, GP⁷⁵ Goldsboro
 Clark, William L., I¹³ Hickory
 *Clary, William Thomas, ObG³² Greensboro
 Clay, Earl Lewis, I³⁰ Oxford
 Clayton, Eugene C., GP⁸ Asheville
 Clayton, Milton Burns,
 OALR³⁹ Washington, D. C.
 †Clement, Edward Buehler (Hon.),
 OALR⁶⁴ Salisbury
 Cleveland, Parish Bowman, GP²⁸ Gatesville
 Cliff, Benjamin Franklin, GP⁴¹ Benson
 Clinton, Roland Smith²⁷ Gastonia
 Cloninger, Charles Edgar, GP¹³ Conover
 Cloninger, Kenneth Lee, ALR¹³ Newton
 Clyatt, Claude Eugene, GP²¹ Denton
 *Cobb, Donnell Borden, S⁷⁵ Goldsboro
 *Cochrane, Fred Richard⁴⁹ Charlotte
 Cochrane, James Daniel, GP¹³ Newton
 Cocke, Jere Ellis (Hon.)⁸ Asheville
 *Codington, Herbert Augustus
 (Hon.), S⁵² Wilmington
 Codnere, John T., U⁸ Asheville
 *Coffey, James Cecil, GP⁶⁴ Salisbury
 Cogdell, David Melvin, GP²⁰ Fayetteville
 Cole, Walter Francis (Hon.), Or³² Greensboro
 *Coleman, Howe Reese, Jr., OALR⁵² Wilmington
 Collings, Ruth Mary, GP³² Greensboro
 Combs, Fielding, ALR²⁵ Winston-Salem
 *Combs, Joseph John, I⁷³ Raleigh
 Conrad, Elizabeth, Pd²⁵ Winston-Salem
 *Cook, Henry Lilly, Jr., OALR³² Greensboro
 *Cook, Joseph Lindsay, GP³² Greensboro
 *Cook, William Eugene, T¹ Mebane
 Cooke, Grady Carlyle, S²⁵ Winston-Salem
 Cooke, H. M., GP⁴⁹ Charlotte

Present at 1948 meeting.

† Deceased.

Cooke, Quinton Edwin, GP 37	Murfreesboro	*Currie, Daniel Smith (Hon.), GP 62	Parkton
Cooke, Ralph M., GP 69	Elkin	*Currie, Daniel Smith, Jr., OALR 20	Durham
Cooley, Samuel Studdiford, GP 8	Black Mountain	Currin, R. G., GP 72	Henderson
*Cooper, Albert Derwin, A 23	Durham	*Cutchin, Joseph Henry (Hon.), GP 24	Whitakers
*Cooper, George Marion (Hon.), PH 73	Raleigh	*Cutchin, Joseph Henry, Jr., GP 33	Roanoke Rapids
*Coppridge, William Maurice, U 23	Durham	*Dale, Grover Cleveland, GP 75	Goldsboro
*Corbett, Clarence Lee, GP 34	Dunn	Dalton, Bennie Booker, GP 60	Asheboro
Corbett, James Patrick, GP 54	Swansboro	Dalton, William B., GP 32	Greensboro
Corbin, George W., Jr., GP 73	Wake Forest	Dalton, William Nicholson (Hon.), GP 25	Winston-Salem
Corcoran, Edwin E., I & D 8	Asheville	†Danehy, Robert J., S 13	Newton
Cornell, William Sessions, S 49	Charlotte	Daniel, L. Sam, GP 30	Oxford
Cornwell, Abner Milton, S 44	Lincolnton	*Daniel, Walter Eugene, U 49	Charlotte
Corpening, Flave Hart, GP 36	Horse Shoe	*Daniels, Oscar Carroll (Hon.), OALR 55	Oriental
Corpening, Oscar J. (Hon.), GP 11	Granite Falls	Daniels, Robert E., GP 8	Asheville
Corpening, William Nye, GP 11	Granite Falls	*Daughtridge, Arthur Lee, R 24	Rocky Mount
*Costner, Walter Vance, Pd 44	Lincolnton	Davant, Charles, GP 11	Lenoir
Couch, Vanderbilt Franklin, OALR 25	Winston-Salem	Davenport, Carlton Alderman, GP 16	Hertford
Covington, Furman P., GP 21	Thomasville	Davey, Joseph Aloysius, GP 20	Robbinsville
Covington, James Madison, Jr., GP 2	Wadesboro	*Davidian, Vartan A., S 41	Smithfield
Covington, John Malloy Clayton, OALR 33	Roanoke Rapids	Davidson, Alan, OALR 39	Statesville
*Cox, Alexander McNeil, GP 63	Madison	Davidson, John E. S. (Hon.), Oph 49	Charlotte
Cox, Grover Steadman (Hon.), Pd 18	Tabor City	*Davis, Charles Burdis, GP 52	Wilmington
Cox, Samuel Clements, GP 54	Jacksonville	*Davis, James Matheson, Pd 2	Wadesboro
Cox, William Foscue, I 25	Winston-Salem	Davis, James W., R 9	Morganton
Coy, Francis Mathew, GP 15	Murphy	*Davis, James Wagner (Hon.), S 39	Statesville
*Cozart, Benjamin Franklin 63	Reidsville	Davis, John Preston, I 25	Winston-Salem
*Cozart, Samuel Rogers, GP 32	Greensboro	Davis, Joseph F. (Hon.), GP 32	Greensboro
*Cozart, Wiley Simon (Hon.), GP 73	Fuquay Springs	*Davis, Julius Theodore, ObG 32	Greensboro
Craig, Robert Lawrence, N 23	Durham	Davis, Philip Bibb, S 32	High Point
*Craig, Sylvester Douglas (Hon.), I 25	Winston-Salem	*Davis, Rachel Darden, Ob 43	Kinston
Crane, George L., I 23	Durham	*Davis, Richard Boyd (Hon.), S 32	Greensboro
Cranmer, John B. (Hon.), S 52	Wilmington	Davis, Thomas W. (Hon.), ALR 25	Winston-Salem
*Cranz, Oscar William, S 43	Kinston	Davis, William H., Jr., GP 56	Elizabeth City
*Craven, Frederick Thorns, GP 10	Concord	*Davison, Wilburt Cornell, Pd & Ed 23	Durham
*Craven, Jean Davidson, Pd 21	Lexington	Dawson, William Earl, GP 31	Stantonsburg
Craven, Thomas, GP 49	Huntersville	Deans, Arthur Wood (Hon.), GP 24	Battleboro
Crawford, William Jennings, U 75	Goldsboro	*Deaton, Paul M., GP 39	Statesville
Crawford, Robert Hope, S 65	Rutherfordton	DeCamp, Allen Ledyard, ObG 49	Charlotte
*Creadick, Robert N., ObG 23	Durham	Dees, Daniel Alfonso (Hon.), OALR 55	Bayboro
Credle, Carroll Spencer, GP 6	Colerain	Dees, John Essary, U 23	Durham
Creech, Bennett, GP 41	Selma	*Dees, Ralph Erastus (Hon.), GP 32	Greensboro
*Creech, Lemuel Underwood, GP 32	High Point	*Dees, Rigdon Osmund (Hon.), GP 32	Greensboro
Creed, George O., GP 67	Laurel Hill	Dees, Susan Coons, Pd 23	Durham
Crescenzo, Victor M., I 63	Reidsville	Dewar, William Banks, I 73	Raleigh
*Crisman, C. S., GP 1	Graham	*Dick, MacDonald, I 23	Durham
Crisp, Sellers Mark, Ob 58	Greenville	Dickie, J. W., GP 52	Wilmington
Cromartie, Robert S. (Hon.), PH 7	Elizabethtown	Dickinson, Elijah Thomas (Hon.), ALR 77	Wilson
Croom, A. B., GP 32	High Point	*Dickinson, Kenneth D. Ob 73	Raleigh
Croom, Gabe Holmes, P 8	Asheville	*Dickson, Malcolm Shields, GP 1	Burlington
*Croom, Robert De Vane, Jr., GP 62	Maxton	Dillard, George Penn 63	Draper
Cross, Almon Rufus, ObG 32	High Point	Dimmette, J. A., GP 27	Gastonia
Crouch, Auley McRae (Hon.), Pd 52	Wilmington	*Ditmore, Harry Boaz, GP 46	Marshall
Crouch, Auley McRae, Jr., Pd 52	Wilmington	*Dixon, George Grady (Hon.), GP 58	Ayden
Crouch, Thomas Dalton (Hon.), GP 39	Stony Point	Dixon, Guy E. (Hon.), PN 36	Hendersonville
Crow, M. B., R 36	Hendersonville	Dixon, P. L., Jr., GP 54	Richlands
Crow, Samuel Leslie, I 8	Asheville	Dixon, William Harvey, Pr 24	Rocky Mount
Crowell, James Allen, ObG 49	Charlotte	*Doffermire, Luther Randolph, GP 34	Dunn
*Crowell, Lester Avant, Sr. (Hon.), S 44	Lincolnton	Donnelly, Grant Lester, GP 8	Oteen
*Crowell, Lester Avant, Jr., I 44	Lincolnton	Donnelly, James Ford, ObG 25	Winston-Salem
Crump, Cecil Lavon, OALR 8	Asheville	Doran, Martha V., GP 32	Greensboro
Crump, George Curtis, I 8	Asheville	Dorenbusch, Alfred A., Otol 49	Charlotte
*Crumpler, Amos Gilmore, GP 73	Fuquay Springs	*Doshier, William Sterling, ObG 52	Wilmington
*Crumpler, James Fulton, Pd 24	Rocky Mount	*Dotterer, Elizabeth James, GP 42	Sanford
Crumpler, Paul (Hon.), GP 66	Clinton	Dotterer, John E., GP 42	Sanford
Cubberely, Charles L., Jr., GP 77	Wilson	Dowling, Judson Davie, Jr., GP 75	Mt. Olive
Cummings, Michael Penn (Hon.), GP 63	Reidsville	Drake, Benjamin Michael, PH 63	Leaksville
		Draper, Arthur J., I 49	Charlotte
		Drummond, Charles Stitt, Pr 25	Winston-Salem
		Duck, Walter Otis, GP 46	Mars Hill
		*Duckett, Virgil Howard, GP 35	Canton
		Duffy, Charles, Pd 19	New Bern

Present at 1948 meeting.

† Deceased.

Duffy, Richard Nixon (Hon.), S ¹⁹	New Bern	Ferrell, John A., PH ⁷³	Raleigh
Duffy, Richard N., Jr., GP&S ¹⁹	New Bern	Fetner, Lawrence Merrill, R ¹¹	Lenoir
Dula, Frederick Mast, S ¹¹	Lenoir	Field, Bob Lewis, GP ⁶⁴	Salisbury
*Duncan, Stacey Allen, GP ⁴¹	Benson	*Fields, Leonard Earl, GP ²³	Chapel Hill
Dunlap, Lucius Victor (Hon.), GP ⁶⁸	Albemarle	Fike, Ralph Llewellyn, GP ⁷⁷	Wilson
Dunn, Richard Berry, ObG ³²	Greensboro	Finch, Ollie Edwin (Hon.), I ⁷³	Raleigh
Durham, Carey Winston, GP ³²	Greensboro	Fink, Emma Sloop, GP ⁴	Crossnore
Dyer, John Wesley, GP ³²	High Point	Finney, Jonathan Richard ⁶⁹	Boonville
*Eagle, James Carr, GP ⁶⁴	Spencer	Fisher, Ernest W., GP ⁴⁵	Franklin
Eagle, Watt Weems, ALR ²³	Durham	*Fisher, George Walton, Jr., GP ⁶²	Elizabethtown
Eagles, Charles Sidney (Hon.), GP ⁷⁷	Saratoga	Fitzgerald, Charles Edmund, GP ⁵⁸	Farmville
Earle, Jesse Burns, Ob ¹⁴	Siler City	Fitzgerald, John Dean, S ⁵⁷	Roxboro
Earp, Raymond Elmore, S ⁴¹	Selma	*Fitzgerald, John Herbert, OALR ⁴¹	Smithfield
*Easley, Eleanor Beamer, ObG ²³	Durham	Fitzgerald, John Hill, Jr., GP ⁴⁴	Lincolnton
*Easom, Herman Franklin, T ⁷⁷	Wilson	Flagge, Philip Wesley (Hon.), I ³²	Fair Hope, Ala.
Eaves, Rupert Spencer, S ⁶⁵	Rutherfordton	Fleetwood, Joseph Anderton, GP ⁵³	Conway
†Eckel, O. F. (Hon.), Anes ⁸	Asheville	Fleming, Frank R., GP ⁶⁹	Elkin
Eckbert, William Fox ²⁷	Cramerton	Fleming, Fred Henry, GP ³⁴	Coats
*Eckerson, Charles Neil, GP ⁶⁸	Troy	Fleming, Lawrence Edwin, S ⁴⁹	Charlotte
Edgerton, Glenn Souders, ObG ⁴⁹	Charlotte	*Fleming, Major Ivy, R ²⁴	Rocky Mount
Edmundson, Frank, Jr., GP ⁶⁰	Asheboro	Fleming, Ralph Gibson, GP ²³	Durham
*Edwards, Bertie Oscar (Hon.), I ⁸	Asheville	Flippin, James Meigs (Hon.)	
Edwards, Forest D., Ob ⁴⁴	Lawndale	GP ⁶⁹	Pilot Mountain
Edwards, Vertie Edward (Hon.),		Flippin, Samuel T. (Hon.), GP ⁶⁹	Siloam
GP ³²	Greensboro	*Flowers, Arthur H., Jr., D ²³	Durham
*Eldridge, Charles Patterson, GP ⁷³	Raleigh	Flowers, Charles Ely (Hon.) ObG ⁷³	Zebulon
Eldridge, Harvey A., GP ³⁴	Dunn	*Flowers, Charles Ely, Jr., ObG ⁷³	Zebulon
*Elfmon, Samuel Leon, I ²⁰	Fayetteville	Floyd, Anderson Gayle, GP ¹⁸	Whiteville
Eller, Albert J. (Hon.), PH ⁷⁶	Wilkesboro	Floyd, Hal Stanfield, GP ⁶²	Fairmont
*Ellington, Amzi Jefferson (Hon.),		Floyd, Lawrence Dowe (Hon.) GP ¹⁸	Fair Bluff
OALR ¹	Burlington	Floyd, William Russell, S ¹⁰	Concord
Elliot, Avon Hall, PH ⁵²	Wilmington	Flythe, William Henry, I ³²	High Point
*Elliott, Joseph Alexander, D ⁴⁹	Charlotte	*Forbes, Thomas Earl, GP ⁶³	Reidsville
*Elliott, Joseph Alexander, Jr., ⁴⁹	Charlotte	Forbus, Wiley Davis, Path ²³	Durham
Elliott, Julian Carr, S ³⁰	Oxford	Ford, David Emerson, PH ⁵	Washington
Elliott, William McBrayer, GP ⁶⁵	Forest City	*Ford, Fred, GP ⁶²	Maxton
*Ellis, Elizabeth Lange, GP ³²	Greensboro	Forrest, Daniel Efland, GP ²³	Hillsboro
*Ellis, Ralph V., A & I, ³²	Greensboro	*Forsyth, H. Francis, Or ²⁵	Winston-Salem
*Ennett, Nathaniel Thomas, PH ¹²	Beaufort	Fortescue, William Nicholas,	
Erb, Norris Scribner, U ⁶⁴	Salisbury	GP ³⁶	Hendersonville
Erickson, Cyrus Conrad, Path ²³	Durham	Fortune, Alexander Fletcher	
*Ernst, H. E., GP ¹⁰	Concord	(Hon.), GP ³²	Greensboro
Ervin, John Witherspoon, GP ⁹	Morganton	Fortune, Benjamin Fletcher ³²	Greensboro
*Erwin, E. A., GP ⁶⁷	Laurinburg	Foster, Clarence B., Oph ⁴⁹	Charlotte
Etherington, John L., OALR ⁷⁵	Goldsboro	*Foster, Howitt, H., GP ⁷⁴	Norlina
*Ewers, Edwin Patterson, GP ²²	Warsaw	*Foster, John Franklin, GP ⁴²	Sanford
Fagan, Phillip GP ⁶²	Fairmont	Foster, Malcolm Tennyson, PH ²⁰	Fayetteville
*Faison, Elias Sampson, I ⁴⁹	Charlotte	Fowler, Henry Jackson, GP ²⁵	Walnut Cove
Faison, Yates Wellington (Hon.),		Fowler, Shelton F., GP ¹¹	Lenoir
Pd ⁴⁹	Charlotte	Fowlkes, William Mortimer, Jr., GP ⁷³	Wendell
Fales, Robert Martin, GP ⁵²	Wilmington	Fox, Dennis Bryan, S ⁶⁸	Albemarle
*Falls, Fred, GP ¹⁷	Shelby	Fox, Francis Hill, I ²³	Durham
*Farmer, William Anderson, S ²⁰	Fayetteville	Fox, Herbert Junius, I ²³	Durham
Farmer, William Dempsey, OALR ³²	Greensboro	Fox, Norman Albright, GP ³²	Greensboro
*Farmer, W. E., I ⁸	Asheville	*Fox, Powell Graham, U ⁷³	Raleigh
Farnsworth, David, I ⁸	Oteen	Fox, Robert Eugene, PH ⁷³	Albemarle
Farrington, Reno Kirby, S ²¹	Thomasville	Franklin, Ernest Washington, ObG ⁴⁹	Charlotte
Farthing, John Watts, S ⁵²	Wilmington	*Frazier, John Wesley, Jr., ⁶⁴	Salisbury
*Fassett, Burton Watson (Hon.),		*Freedman, Arthur, I ³²	Greensboro
OALR ²³	Durham	Freeman, Alton Brown, GP ⁶⁰	Randleman
*Faulk, James Grady, S ⁷¹	Monroe	*Freeman, Jere David, OALR ⁵²	Wilmington
Fauntleroy, Joseph Whittlesey, Ob ³⁶	Zirconia	Freeman, Percy L., U ²⁷	Gastonia
Fearing, Isaiah (Hon.), GP ⁵⁶	Elizabeth City	Freeman, William Talmage, Pd ⁸	Biltmore
Fearrington, James Cornelius		Fresh, William Maurice, OALR ¹³	Hickory
Pass, I ²⁵	Winston-Salem	Fritz, Jacob Luther, ALR ⁶⁰	Asheboro
Feezor, C. N., GP ⁶⁴	Salisbury	Fritz, Oliver Grady, GP ²⁵	Walkertown
Feldman, Leon Henry, I ⁸	Asheville	*Fritz, William Abel, GP ¹³	Hickory
*Felton, Robert Lee, Jr., GP ⁵¹	Carthage	Frizzelle, Mark T. (Hon.), GP ⁵⁸	Ayden
Fenner, Edwin Ferebee (Hon.) ⁷²	Henderson	Frye, Glenn Raymer, S ¹³	Hickory
*Ferguson, George Burton, OALR ²³	Durham	Fulcher, Luther, GP ¹²	Beaufort
Ferguson, Robert Thrift, G ⁴⁹	Charlotte	*Fuller, Henry Fleming, ObG ⁴³	Kinston
Ferneyhough, William Todd, OALR ⁶³	Reidsville	*Fulp, James Francis, GP ⁶³	Stoneville

* Present at 1918 meeting.

† Deceased.

*Furgurson, Ernest Whitmal, GP 47	Plymouth	Grady, Franklin M., GP 19	New Bern
Furman, William H. (Hon.) 72	Henderson	Grady, James C. (Hon.), GP 41	Kenly
Futrell, Lokie Melton, GP 37	Murfreesboro	*Graham, Charles Pattison, S 52	Wilmington
Gage, Lucius Gaston, I 49	Charlotte	*Graham, John Borden, Path 23	Chapel Hill
Gallant, Robert Miller (Hon.), GP 49	Charlotte	Graham, William Alexander, ObG 23	Durham
Gamble, John R., Jr., GP 44	Lincolnton	Grant, H. B., Pd 24	Rocky Mount
*Gambrell, Grover Cleveland, PH 21	Lexington	Grantham, Wilmer Lloyd (Hon.), U 8	Asheville
*Gardner, Clarence Ellsworth, Jr., S 23	Durham	Graves, Robert Williams, N 23	Durham
Garrard, Robert Lemley, NP 32	Greensboro	*Gray, Cyrus Leighton, R 32	High Point
*Garren, Robert Hall (Hon.), OALR 71	Monroe	Gray, Paul M., S 23	Durham
Garrenton, Connell, T 35	Bethel	Grayson, Charles Shober (Hon.), Ob 32	High Point
Garrett, Frank Bernard (Hon.), OALR 61	Rockingham	*Green, Harold David, I&Phy 25	Winston-Salem
*Garrison, Ralph Bernard, Ob 61	Hamlet	Green, William Wills (Hon.), S 24	Tarboro
Garriss, Frank Henry (Hon.), PH 6	Lewiston	Greene, Garland V., GP 64	Mocksville
*Garvey, Fred Kesler, U 25	Winston-Salem	Greene, James Verdery, GP 20	Fayetteville
Garvey, Robert Robey, U 3	Blowing Rock	Greene, Joseph Berry (Hon.), OALR 8	Asheville
Garvin, David O., PH 23	Chapel Hill	*Greene, Phares Yates, GP 1	Burlington
Gaskin, John Stover, GP 68	Albemarle	Greene, William Alexander, GP 18	Whiteville
*Gaskin, Lewis Roy, GP 68	Albemarle	*Greenhill, Maurice Herzberger, PN 23	Durham
Gaskin, Madge Baker, G 68	Albemarle	Greenwood, Adolphus Barte (Hon.), U 8	Asheville
Gasque, Mac Roy, GP 29	Fontana Dam	Greenwood, James G., Hosp. Res. 49	Charlotte
Gast, Charlotte Marie 13	Hickory	Grier, Charles Talmadge (Hon.) 51	Carthage
*Gaul, John Stuart, Or 49	Charlotte	*Grier, John C., P 51	West End
*Gay, Charles Houston, Pd 49	Charlotte	*Griffin, Harvey Lee, GP 60	Asheboro
*Geddie, Kenneth Baxter, Pd 32	High Point	Griffin, Harold Walker, OALR 13	Hickory
Gentry, George W. (Hon.), GP 57	Roxboro	Griffin, Leslie W., GP 34	Erwin
Gibbon, James Wilson, S 49	Charlotte	Griffin, Mark Alexander (Hon.), P 8	Asheville
Gibbon, Robert Lardner (Hon.), S 49	Charlotte	Griffin, William Ray (Hon.), PN 8	Asheville
Gibbons, George W., GP 35	Canton	*Griffis, John William 21	Denton
Gibbons, Julius J., GP&S 11	Lenoir	*Griffith, Franklin Webb (Hon.), S 8	Asheville
Gibbs, Emmett Wyattman (Hon.), GP 17	Shelby	Griffith, Lewie Muller (Hon.), OALR 8	Asheville
*Gibbs, Stuart Wynn, R 24	Rocky Mount	Griffith, Mary Irene, Ob 25	Winston-Salem
Gibson, F. D., Jr., GP 62	Fairmont	Grigg, Willard W., GP 27	Gastonia
*Gibson, Lauren Osborne (Hon.), ObG 39	Statesville	Griggs, Boyce Powell, GP 44	Lincolnton
*Gibson, Milton Reynolds (Hon.), OALR 73	Raleigh	Grimes, William Lawrence (Hon.), S 25	Winston-Salem
Gibson, M. W., GP 14	Goldston	Grimson, Keith Sanford, S 23	Durham
Gilbert, Edward Lee, GP 25	Winston-Salem	Groome, James Gordon, GP 32	High Point
Gilbert, George G., U 8	Asheville	Groves, Robert Burwell, GP 27	Lowell
Gill, Joseph Armstrong, GP 56	Elizabeth City	*Gunter, June U., Path 23	Durham
Gillespie, Samuel Crawford, I 8	Asheville	*Gunter, Van Wyche, GP 42	Jonesboro
*Gilmore, Clyde Manly, I 32	Greensboro	Gwynn, Houston Lafayette, GP 1	Yanceyville
*Gilmour, Monroe Taylor, I 49	Charlotte	*Haar, Frederick Behrend, Pd 58	Greenville
†Gilreath, Frank Hackett (Hon.) 76	North Wilkesboro	*Hackler, Robert Hardin, Jr., R 5	Washington
Glass, Sarah E., P 73	Raleigh	Hadley, Herbert Wood, 58	Greenville
Gleitz, Allen A., S 54	Jacksonville	Hagaman, John Bartlett (Hon.), GP 3	Boone
Glenn, Channing, GP 7	Elizabethtown	Hagaman, Len Doughton, PH 3	Boone
*Glenn, Charles Arthur, S 27	Gastonia	Hagna, Lewis William, GP 48	Marion
Glenn, Charles Foster, S 65	Rutherfordton	*Haines, Hilton D., ObG 61	Rockingham
*Glenn, Dorothy Norman, GP 27	Gastonia	Hairfield, B. D., S 9	Morganton
Glenn, Henry Franklin, Jr., GP 27	Gastonia	Hall, John Moir 69	Elkin
Glenn, John C., Jr., R 23	Quantico, Va.	Hall, William Dewey, P 33	Roanoke Rapids
Glenn, Lucius Newton (Hon.), S 27	Gastonia	Ham, Clem, PH 71	Monroe
Glover, F. O., GP 64	Salisbury	Hamblen, Edwin Crowell, G 23	Durham
Goddard, David W., U 23	Durham	Hambrick, Robert Theodore, Pr 13	Hickory
*Gold, Ben, Pd 17	Shelby	Hamer, Alfred Wilson, GP 9	Morganton
*Goley, Willard Coe, GP 1	Graham	*Hamer, Douglas, Jr., U 11	Lenoir
Goode, Thomas Vance (Hon.), S 39	Statesville	Hamer, Eugene F., GP 71	Monroe
*Goodman, E. G., I 52	Wilmington	Hamer, Jerome B., S 49	Charlotte
Goodwin, Cleon Walton, S 77	Wilson	Hamer, William Alexander, Anes 49	Charlotte
Goodwin-Barbour, Edith, GP 9	Morganton	Hamilton, Alfred T., S 73	Raleigh
Goodwin, Oscar Sexton, GP 73	Apex	*Hamilton, John Homer, PH 73	Raleigh
Gordon, John Simpson, ALR 49	Charlotte	Hammond, Alfred Franklin, Jr., GP 19	New Bern
Goswick, Harry Wilson, Jr., S 25	Winston-Salem	Hamrick, James Yates, Pd 17	Boiling Springs
*Goudelock, John Jeffries, U 71	Monroe	Hamrick, John Carl, S 17	Shelby
*Goudge, Mabel Ensforth, P 23	Durham	*Hamrick, Ladd Watts Jr., 17	Boiling Springs
*Gouge, Arthur Edward, GP 50	Bakersville	Hand, Edgar Hall (Hon.), PH 49	Charlotte
Gouldin, John M., GP 77	Elm City	Hansen, Alton S., R 49	Charlotte
†Gove, Anna M. (Hon.), GP 32	Greensboro	*Hansen-Pruss, Oscar Carl Edward, I 23	Durham
Grady, Edward Stephen, Ob 41	Smithfield	Harbison, John William, S 17	Shelby

* Present at 1919 meeting.

† Deceased.

- Harden, Robert Norman, S ³² Greensboro
 *Harder, Frank Kirby, PH ³² Greensboro
 *Hardin, Eugene Ramsey, PH ⁶² Lumberton
 Harding, B. H., GP ⁶⁹ Elkin
 Harding, Samuel Asberry (Hon.), GP ⁶⁴ Mocksville
 Hardman, Edward Francis, ObG ⁴⁹ Charlotte
 Hardy, Ira May (Hon.), ALR ⁴³ Kinston
 Hare, Ransom Bryant, U ⁵² Wilmington
 Harmon, Raymond Harris ³ Boone
 Harper, James Henry (Hon.), Pd ³¹ Snow Hill
 *Harrell, George Thomas, Jr., I ²³ Winston-Salem
 *Harrell, Leon Jackson ⁷⁵ Goldsboro
 Harrell, W. Fletcher, P ⁴⁹ Charlotte
 Harrell, William Horace, GP ⁴⁷ Creswell
 Harrill, Henry Clay, U ³² Greensboro
 *Harrill, James Albert, ALR ²⁵ Winston-Salem
 Harrill, Lawson Baxter (Hon.), S ⁶⁵ Caroleen
 Harris, Charles I., Jr., GP&S ⁴⁷ Williamston
 *Harris, Isaac E., Jr., S ²³ Durham
 Harris, J. Robert ⁶¹ Rockingham
 Harris, Jerome S., Pd ²³ Durham
 Harris, Russell P., S ⁶³ Thomasville
 *Harris, William Thomas GP ⁶⁸ Troy
 Harrison, Edmund (Hon.), GP ³² Greensboro
 Harriss, Andrew Howell (Hon.), GP ⁵² Wilmington
 *Harry, John McKamie, U ²⁰ Fayetteville
 *Hart, Julian Deryl, S ²³ Durham
 *Hart, Lillard Franklin, GP ⁷³ Apex
 *Hart, Oliver James, U ²⁵ Winston-Salem
 *Hart, Verling Kersey, ALR ⁴⁹ Charlotte
 Hartman, Bernhard Henry, P ⁸ Asheville
 *Hartness, William Rufus, GP ⁴² Jonesboro
 Harton, Roman Albert, GP ²³ Durham
 *Harvey, Wallace Watson, GP ³² Greensboro
 Hatcher, Martin Armstead, U ⁶¹ Hamlet
 Hatcher, Samuel W., GP ¹² Morehead City
 Hawes, Charles Forest, GP ²² Rose Hill
 Hawes, C. M., OALR ⁵ Washington
 Hawes, George Aubrey, U ⁴⁹ Charlotte
 Hawes, James Beebe, OALR ⁵⁸ Greenville
 Hayes, James, GP ⁶² Fairmont
 *Haywood, Hubert Benbury (Hon.), I ⁷³ Raleigh
 Head, William Thomas, GP ⁶⁵ Melvin Hill
 Heath, Hunter, GP ²² Chinquapin
 *Hedgpeth, Edward McGowan, I ²³ Chapel Hill
 Hedgpeth, Emmett Martin, GP ⁵⁷ Roxboro
 *Hedgpeth, Louten Rhodes, OALR ⁶² Lumberton
 Hedgpeth, William Carey, ObG ⁶² Lumberton
 *Hedrick, Clyde Reitzel, C ¹¹ Lenoir
 Hedrick, Richard E., GP ²⁵ Walkertown
 Heffner, B. L., I ¹ Burlington
 *Hege, John Roy (Hon.), PH ¹⁰ Concord
 *Heinitsh, George, OALR ⁵¹ Southern Pines
 Helms, Jefferson Bivins, S ⁹ Morganton
 Helsabeck, Belmont Augustus, GP ²⁵ Winston-Salem
 Helsabeck, Chester Joseph, GP ²⁵ Walnut Cove
 Helsabeck, Rupert Sylvester, GP ²⁵ King
 Hemphill, Clyde Hoke, OALR ⁴⁸ Highlands
 Hemphill, James Eugene, R ⁴⁹ Charlotte
 Henderson, Clair Crouse, GP ⁷⁵ Mt. Olive
 *Henderson, John Percy, GP ⁵⁴ Jacksonville
 Henderson-Smathers, Irma Carlene, GP ⁸ Asheville
 *Hendrick, Harry V., ⁶⁵ Rutherfordton
 Hendricks, Paul E., GP ¹⁷ Kings Mountain
 *Hendrix, James Paisley, I ²³ Durham
 Henley, Ruth Dixon, Ob ²⁵ Winston-Salem
 *Henley, Thomas F., Pd ²⁵ Winston-Salem
 Henry, Hector Himel, PH ⁴⁹ Charlotte
 *Henry, Tidal Boyce, I ⁶¹ Rockingham
 Hensley, Charles Albert, OALR ⁸ Asheville
 *Henson, Thomas Albert ³² Greensboro
 Herbert, William P. (Hon.), S ⁸ Asheville
 Herndon, Claude Nash, Jr., I ²⁵ Winston-Salem
 Herrin, Hermon Keith ²⁷ Gastonia
 *Herring, Edward Humphrey, GP ⁷³ Raleigh
 Herring, Robert Alexander, PH ³² High Point
 Herring, Tilghman ⁷⁷ Wilson
 Hesser, Frederick H., P ²³ Durham
 Hester, Joseph Robert, GP ⁷³ Wendell
 Hester, William Shepherd, S ⁶³ Reidsville
 *Hiatt, Joseph S., Jr., T ³⁸ McCain
 Hickam, John B., I ²³ Durham
 Hickman, Harry Stuart ¹¹ Lenoir
 Hicks, Calvin Shaw (Hon.), GP ²³ Durham
 *Highsmith, William Cochran, I ²⁰ Fayetteville
 *Hightower, Felda, S ²⁵ Winston-Salem
 *Hilborn, Robert Ross, GP ⁵¹ Mooresville
 Hill, F. Burnarde, GP ¹⁰ Concord
 *Hill, Millard Daniel, D ⁷³ Raleigh
 Hill, William Henry, GP ⁶⁸ Albemarle
 Hill, William Isaac (Hon.), GP ⁶⁸ Albemarle
 *Himmelwright, G. G., S ⁵ Washington
 Hinnant, Milford (Hon.), GP ⁴¹ Micro
 *Hipp, Edward Reginald, S ⁴⁹ Charlotte
 Hipp, Edward Reginald, Jr., ⁴⁹ Charlotte
 Hisey, R. F., GP ⁶³ Spray
 *Hitch, Joseph Martin, D ⁷³ Raleigh
 *Hodges, Horace Hayden, I ⁴⁹ Charlotte
 Hodgin, Henry Hiram (Hon.), GP ⁶² Red Springs
 Hoggard, John Thomas, GP ⁵² Wilmington
 Hoggard, William Alden (Hon.), GP ¹⁶ Hertford
 Hoggard, William A., GP ⁵⁶ Manteo
 Hogshead, Ralph, Jr., GP ⁹ Morganton
 *Hohman, Leslie B., P ²³ Durham
 *Holbrook, Joseph Samuel, GP ³⁹ Statesville
 Holden, Howard Thompson, OALR ⁴⁹ Charlotte
 Hollister, William, GP ¹⁹ New Bern
 *Hollister, William F., S ⁵¹ Pinehurst
 *Holloway, Joseph Clark, GP ²³ Durham
 *Hollowell, Claude Vermont ⁷⁵ Goldsboro
 Hollyday, William Murray (Hon.), OALR ⁸ Asheville
 *Holmes, Andrew Byron (Hon.), GP ⁶² Fairmont
 Holmes, F. H., GP ⁷⁷ Stantonsburg
 Holmes, George Washington, Or ²⁵ Winston-Salem
 *Holt, Duncan Waldo, I ³² Greensboro
 Holt, Lawrence Byerly, Oph ²⁵ Winston-Salem
 Holt, Thomas Jefferson (Hon.), OALR ⁷⁴ Warrenton
 Holt, William Preston (Hon.), S ³⁴ Erwin
 Holton, A. J., GP ¹⁷ Fallston
 Holton, Thomas Jefferson, OALR ⁴⁹ Charlotte
 Hooks, W. Borden, GP ²⁴ Tarboro
 Hooper, Delos D. (Hon.) ⁴⁰ Sylva
 Hooper, Joseph Ward (Hon.), S ⁵² Wilmington
 Hoot, M. P., OALR ⁵⁸ Greenville
 Hoover, Charles Henry (Hon.), GP ⁴⁴ Crouse
 Hoover, William Alonzo, S ¹⁵ Murphy
 Hope, Alex Chalmers, S&G ⁴⁹ Charlotte
 *Horan, Robert Vincent, S ²⁰ Fayetteville
 Horton, Miles Christopher (Hon.), GP ⁷³ Raleigh
 Horton, William Calvin (Hon.), Pr ⁷³ Raleigh
 Hoskins, William H., GP ²² Whiteville
 Houser, Emanuel Alvin (Hon.), GP ¹⁷ Shelby
 *Houser, Forrest Melville, GP ²⁷ Cherryville
 Houser, Oscar Julian (Hon.), OALR ⁴⁹ Charlotte
 Hovis, Leighton Watson (Hon.), OALR ⁴⁹ Charlotte
 *Howard, Corbett Etheridge, R ⁷⁵ Goldsboro
 Howard, John Richard, ObG ¹⁸ Lake Waccamaw
 Howard, J. Cooper ²⁷ Cherryville
 *Howell, William Lawrence (Hon.), GP ⁶¹ Ellerbe

- *Hubbard, Frederic Cecil, S ⁷⁶ North Wilkesboro
 Hubbard, Robert T., GP & Ob ⁸ Asheville
 *Hudson, Miles Hildebrand, GP ⁹ Valdes
 Huffines, Thomas Ruffin, U ⁸ Asheville
 Hughes, Samuel E., Jr., ⁸ Richmond, Va.
 Hundley, Deane, Jr., GP ²² Wallace
 Hunsucker, Charles Lamar, GP ¹³ Hickory
 Hunt, James F. (Hon.), GP ⁶⁵ Spindale
 Hunt, Jasper Stewart, Pd ⁴⁹ Charlotte
 Hunt, William Bryce, GP ²¹ Lexington
 Hunter, Frank Patterson, GP ⁷⁴ Warrenton
 Hunter, J. B. ¹⁷ Shelby
 Hunter, John F. C., R ²² Magnolia
 *Hunter, John Pullen, GP ⁷³ Cary
 Hunter, Shelton B., Jr., GP ⁴¹ Kenly
 *Hunter, William Blair, PH ³⁴ Lillington
 *Hunter, William Cooper, I ⁷⁷ Wilson
 Huntington, S. H., GP ¹ Burlington
 Hurdle, Samuel Walker (Hon.),
 GP ²⁵ Winston-Salem
 Hussey, Howard S., Hosp. Res. ²⁴ Tarboro
 Huston, John Walter (Hon.), T ⁸ Asheville
 Hutaff, Lucille, I ²⁵ Winston-Salem
 Hutchinson, Sankey Smith (Hon.)
 S ⁷ Bladenboro
 Hyde, Frank Edward, ObG ¹² Beaufort
 *Ingram, William B., GP ⁴⁹ Charlotte
 Irmen, F. A., NP ⁷³ Raleigh
 Irons, C. Fred, GP ⁵⁸ Greenville
 Irons, Maline G., P ⁵⁸ Greenville
 *Irwin, Henderson (Hon.), GP ⁷⁵ Eureka
 *Ivey, Henry B. (Hon.), R ⁷⁵ Goldsboro
 Ivey, Robert Robbins, S ⁸ Asheville
 Izlar, Henry LeRoy (Hon.), GP ²⁵ Winston-Salem
 Jackson, B. Richard, Pr & S ⁷³ Raleigh
 Jackson, Marshall Vaden, GP ⁴¹ Princeton
 Jackson, Walter Leo (Hon.), S ³² High Point
 Jacobs, Julian Erich John, Or ⁴⁹ Charlotte
 Jacobs, Paul, GP ⁸ Oteen
 *Jacocks, W. P. (Hon.), PH ⁷³ Raleigh
 *James, Arthur Augustus, Jr., GP ⁴² Sanford
 *James, William Duer, S ⁶¹ Hamlet
 Jarman, Fontaine Graham
 (Hon.), S ³³ Roanoke Rapids
 Jeffreys, Everett O., NS ²⁵ Winston-Salem
 Jennings, Edward C., OALR ⁴³ Washington, D. C.
 Jennings, Royal Garfield, GP ²¹ Thomasville
 Jervy, Allen Jones, S ⁵⁹ Tryon
 Jervy, William St. Julien ⁵⁹ Tryon
 *Johnson, Amos Neill, GP ⁶⁶ Garland
 *Johnson, Charles Thomas, GP ⁶² Red Springs
 Johnson, Floyd (Hon.), PH ¹⁸ Whiteville
 Johnson, Gale D., GP ³⁴ Dunn
 *Johnson, Gaston Frank, R ²⁵ Winston-Salem
 *Johnson, George W., ObG ⁵² Wilmington
 *Johnson, Harry Lester, S ⁶⁹ Elkin
 Johnson, H. W., S ⁵² Wilmington
 Johnson, Jeremiah Robert, GP ⁶⁹ Elkin
 Johnson, John Brown (Hon.), S ⁴⁸ Old Fort
 Johnson, John Ralph, GP ³⁴ Dunn
 Johnson, Joseph Lewis, GP ¹ Graham
 Johnson, Julius D., OALR ¹⁷ Shelby
 *Johnson, L. Meredith, T ³⁸ McCain
 Johnson, Paul William, Ob ²⁵ Winston-Salem
 *Johnson, Walter Royle, I ⁸ Asheville
 Johnson, William Alexander (Hon.),
 GP ⁶³ Reidsville
 *Johnson, Wingate Memory (Hon.),
 I ²⁵ Winston-Salem
 Johnston, Christopher, I ⁵² Wilmington
 Johnston, James Gilliam (Hon.),
 OALR ⁴⁹ Charlotte
 Johnston, Joseph B., Jr., I ¹⁰ Kannapolis
 Johnston, Wiley Warren (Hon.), ObG ⁵⁶ Manteo
 Johnston, William Oliver, I ⁴⁹ Charlotte
 Jolley, John William, OALR ⁶⁹ Elkin
 Jonas, John Frank (Hon.), GP ⁴⁸ Marion
 Jones, Arthur Lee, GP ³ Lansing
 Jones, Beverly Nicholas, ALR ²⁵ Winston-Salem
 Jones, Beverly Nicholas, Jr.,
 OALR ²⁵ Winston-Salem
 Jones, Carey Celester, GP ⁷³ Apex
 Jones, Clyde T., GP ³ West Jefferson
 Jones, Craig, S ¹⁷ Shelby
 Jones, Dean Cicero, GP ³ Jefferson
 Jones, Donnie H., Jr., GP ⁴¹ Princeton
 Jones, Frank Woodson, S ¹³ Newton
 *Jones, Grace Germania, S ⁴⁹ Charlotte
 Jones, M. E., GP ¹¹ Granite Falls
 *Jones, Otis Hunter, ObG ⁴⁹ Charlotte
 Jones, Ransom J., PH ⁴³ Kinston
 Jones, Thomas Thweatt, D ²³ Durham
 Jones, William McConnell, Pd ²⁷ Gastonia
 Jones, William Samuel, GP ²⁴ Nashville
 Josselson, Albert J., I ²³ Durham
 Joyner, George William, S ⁶⁰ Asheboro
 Joyner, Powell Winfred, GP ³³ Enfield
 Judd, Glenn Ballentine, GP ⁷³ Varina
 *Justa, Samuel Harry, U ²⁴ Rocky Mount
 Justice, Gaston B. (Hon.), GP ⁴⁸ Marion
 Justice, William Shipp, S ⁸ Asheville
 Kafer, Oscar Adolph, GP ¹⁹ New Bern
 Kahn, Joseph W., GP ⁴⁵ Franklin
 Kapp, Constantine Hege, GP ²⁵ Winston-Salem
 Karansky, Stanley, GP ⁸ Enka
 Kavanagh, William Paul, GP ⁶⁴ Cooleemee
 Kever, James Woodfin, T ¹³ Hickory
 Keiger, Oscar R. (Hon.), GP ²⁵ Winston-Salem
 Keiter, William Eugene, Pd ⁴³ Kinston
 *Keith, Marion Yates, Pd ³² Greensboro
 *Keithan, John F., S ⁸ Asheville
 Kelley, Douglas M., P ²⁵ Winston-Salem
 Kelly, Luther Wrentmore, I ⁴⁹ Charlotte
 *Kelsey, Weston M., Pd ²⁵ Winston-Salem
 *Kemp, Malcolm Drake, P ⁵¹ Pinebluff
 Kempner, Walter, I ²³ Durham
 *Kendall, Benjamin Horton, GP ¹⁷ Shelby
 *Kendall, John Harold, GP ⁶⁶ Clinton
 Kendrick, Charles Mattox, I ¹¹ Lenoir
 *Kennedy, John Pressly, S ⁴⁹ Charlotte
 *Kennedy, Leon Toland, I ⁴⁹ Charlotte
 *Kent, Alfred Abraham, Jr., GP ¹¹ Granite Falls
 Kernodle, G. W., Pd ¹ Burlington
 *Kernodle, Harold B., Or ¹ Burlington
 *Kerns, Thomas Cleveland (Hon.)
 OALR ²³ Durham
 Kerr, James Edwin (Hon.), GP ²⁵ Winston-Salem
 *Kerr, Joseph T., S ⁷⁷ Wilson
 Kesler, Robert Cicero, OALR ³² Greensboro
 Ketchie, James Meredith ⁶⁴ Salisbury
 *Ketner, Fred Yarkin, GP ¹⁰ Concord
 Kibler, William Herbert (Hon.),
 ALR ⁹ Morganton
 Kiger, Roger S., GP ²⁵ Winston-Salem
 Killian, Frank McClure, OALR ⁴⁵ Franklin
 *Kimmelstiel, Paul, Path ⁴⁹ Charlotte
 King, Duncan Ingraham Campbell,
 Pd ³⁶ Hendersonville
 King, Edward, Anes ⁸ Asheville
 King, Edward Sandling, Pd ²⁵ Winston-Salem
 *King, Parks McCombs (Hon.), GP ⁴⁹ Charlotte
 King, Richard Morrison (Hon.), GP ¹⁰ Concord
 King, Robert I ²⁰ Fayetteville
 *King, Robert Rogers, Jr., PH ³ Boone
 Kinlaw, J. B., GP ⁶² Rowland
 Kinlaw, Murray Carlyle, GP ⁶² Lumberton

- †Kirby, Guy S. (Hon.), GP ⁴⁸ Marion
 *Kirby, William Leslie, D ²⁵ Winston-Salem
 *Kirchberg, Roy William ⁴⁰ Sylva
 Kirk, William Redin (Hon.), I ³⁶ Hendersonville
 †Kirkpatrick, William L. (Hon.), GP ³⁵ Waynesville
 Kirksey, James Jackson, Pd ⁹ Morganton
 Kirksey, William Albert, GP ⁹ Morganton
 Kiser, Glenn, Pd ⁶⁴ Salisbury
 Kistler, A. J., Hosp. Res. ⁷⁵ Goldsboro
 Kitchin, Thurman D. (Hon.) Ed ⁷³ Wake Forest
 Klenner, Fred Robert ⁶³ Reidsville
 Kneedler, William Harding, I ⁴⁹ Charlotte
 *Knight, Floyd Lafayette, S ⁴² Sanford
 Knoefel, Arthur Eugene, Jr., GP ⁸ Black Mountain
 Knowles, Daniel Lamont, GP ²⁴ Rocky Mount
 Knox, John (Hon.), GP ⁶² Lumberton
 *Knox, Joseph Clyde, Pd ⁵² Wilmington
 Kodack, Albert, GP & S ⁸ Asheville
 *Koogler, Benjamin Robert, GP ⁶⁸ Candor
 *Koonce, Donald B., S ⁵² Wilmington
 Koonce, S. Everett (Hon.), OALR ⁵² Wilmington
 Koontz, E. Ransom ⁸ Oteen
 Kornegay, Lemuel Weyher ²⁴ Rocky Mount
 Kornegay, Robert Dumais, Or ²⁴ Rocky Mount
 Koseruba, George M., Pd ⁵² Wilmington
 Kossove, Albert Anthony, PN ⁴⁹ Charlotte
 Kossove, Irene Levy, ObG ⁴⁹ Charlotte
 Kraycirik, E. T., GP ¹ Burlington
 *Kress, Esta Joyce Levy, Pd ² Wadesboro
 *Kress, Jacob Himi, S ² Wadesboro
 Kroncke, Fred George, I ³³ Roanoke Rapids
 Lackey, Marvin Alphonso, OALR ³² High Point
 Lafferty, John Ogden, R ⁴⁹ Charlotte
 Lafferty, Robert Hervey (Hon.), R ⁴⁹ Charlotte
 *Lake, Ralph Callihan, S ³² Greensboro
 Lampley, Charles Gordon ¹⁷ Shelby
 Lancaster, Newton Paris, GP ³⁵ Waynesville
 *Lane, Bessie Evans, I ⁷³ Raleigh
 *Lane, John Lofton (Hon.), OALR ²⁴ Rocky Mount
 *Lang, A. M., GP ⁹ Morganton
 *Lanier, Verne Clifton, GP ²¹ Welcome
 *Lapsley, Alberti Fraser, GP ⁶⁸ Badin
 Large, Hiram Lee (Hon.), U ²⁴ Rocky Mount
 *Larkin, Ernest Waddill, OALR ⁵ Washington
 Larson, J. D., GP ⁶² Rowland
 Lascara, Vincent E., NP ⁷³ Norfolk, Va.
 Lassiter, Vernon Clark, S ²⁵ Winston-Salem
 *Lassiter, Will Hardee, Jr., GP ⁴¹ Selma
 Laton, James Franklin (Hon.), OALR ⁶⁸ Albemarle
 Lattimore, Everett Beam (Hon.) GP ¹⁷ Shelby
 Laughren, Gus, GP ⁵⁰ Burnsville
 *Lawrence, Benjamin Jones, S ⁷³ Raleigh
 Lawson, George Williams, GP ¹ Graham
 Lawson, Robert Barrett, Pd ²⁵ Winston-Salem
 *Leath, MacLean Bacon, OALR ³² High Point
 *LeBauer, Maurice Leon, S ³² Greensboro
 *LeBauer, Sidney Ferring, I ³² Greensboro
 Lee, C. Marshall, Jr., S ⁸ Asheville
 *Lee, J. Marshall, GP ⁶⁶ Newton Grove
 *Lee, Mike, U ⁴³ Kinston
 *Lee, Thomas Leslie, ObG ⁴³ Kinston
 *Leinbach, Robert Frederic (Hon.), I ⁴⁹ Charlotte
 Lennon, Hershel Clanton, Path ³² Greensboro
 *Leonard, Jacob Calvin, Jr., OALR ²¹ Lexington
 *Leonard, Ruth, Oph ⁴⁹ Charlotte
 Lewis, Clifford Whitfield ³² Greensboro
 Lewis, John Sumter, S ¹³ Hickory
 Lewis, Robert Edward, S ⁷⁶ North Wilkesboro
 Lewis, Sigma Van ⁶ Windsor
 Lewis, Walter Glenn, GP ³² Gibsonville
 *Lide, Thomas N., CP ⁵¹ Pinehurst
 Liles, George W., S ¹⁰ Concord
 Liles, Lonnie Carl, GP ⁷³ Raleigh
 †Lilly, James Marshall (Hon.), OALR ²⁰ Fayetteville
 Lindsay, Bert G., Jr., GP ²⁵ Walnut Cove
 *Lindsay, Robert Boyd, PH ²³ Chapel Hill
 Lineberry, John Alson, PH ⁶³ Tarboro
 Lister, John L. (Hon.), U ⁵³ Jackson
 Little, Howard L., GP ³² Gibsonville
 Little, J. R., OALR ⁶⁴ Salisbury
 Little, Lonnie Marcus, GP ³⁹ Statesville
 *Livingston, Everett Alexander (Hon.), GP ⁶⁷ Gibson
 *Llewellyn, John Thomas, I ⁴⁷ Williamston
 *Lock, Frank Ray, ObG ²⁵ Winston-Salem
 Logan, Frank William Hicks ⁶⁵ Rutherfordton
 *Lohr, Dermot, GP ²¹ Lexington
 *London, Arthur Hill, Jr., Pd ²³ Durham
 Long, Frederick Yount (Hon.), GP ¹³ Catawba
 Long, Glenn (Hon.), GP ¹³ Newton
 Long, Ira Clinton, PN ⁷⁵ Goldsboro
 Long, Lester Lee, GP ³ West Jefferson
 Long, Rowland V., I ²¹ Lexington
 Long, Vann McKee (Hon.), U ²⁵ Winston-Salem
 *Long, William Matthews, S ⁶⁴ Mocksville
 *Long, Zachary Fillmore, Pd ⁶¹ Rockingham
 Lord, Margery Juline, PH ⁸ Asheville
 Lore, Ralph Eli, S ¹¹ Lenoir
 Lott, William Clifton, U ⁸ Asheville
 *Lounsbury, James Breckinridge, ObG ⁵² Wilmington
 Lovelace, Daniel D., A ³² Oakland, California
 Lovelace, Thomas Claude, GP ⁶⁵ Henrietta
 Lovill, Robert Jones (Hon.), GP ⁶⁹ Mount Airy
 *Lowery, John Robert (Hon.), ⁶⁴ Salisbury
 *Lubchenko, Nicholas E. (Hon.), GP ¹⁰ Harrisburg
 Lupton, Carroll Crescent, S ³² Greensboro
 Lupton, Emmett Stevenson, Pd ¹ Graham
 *Lutterloh, Isaac Hayden, Jr., GP & S ⁴² Sanford
 Lyda, Edgar W., GP ⁸ Asheville
 Lyday, Charles Emmett (Hon.) GP ²⁷ Gastonia
 *Lyday, Russell Osborne, S ³² Greensboro
 Lyday, Wilson, GP ⁷⁰ Brevard
 Lyman, Richard Sherman, P ²³ Durham
 Lymberis, Marvin N., Oph ⁴⁹ Charlotte
 Lynch, James Madison (Hon.), S ⁸ Asheville
 Lynch, Kenneth Merrill, Jr., U ⁴⁹ Charlotte
 Lynn, Cy Kellie, GP ⁹ Valdese
 Lyon, Brockton Reynolds, S ³² Greensboro
 Macatee, George, Jr., ObG ⁸ Asheville
 MacConnell, John Wilson (Hon) OALR ⁴⁹ Davidson
 MacDonald, J. Kingsley, ObG ⁴⁹ Charlotte
 MacFadyen, Paul Rutherford, GP ¹⁰ Concord
 Mackie, George Carlyle, GP ⁷³ Wake Forest
 Mackie, Thomas T., I ²⁵ Winston-Salem
 MacLaughlin, W. T., GP ¹³ Conover
 MacMillan, Elbert Alexander, PN ²⁵ Winston-Salem
 MacNider, William deBerniere (Hon.), Phar ²³ Chapel Hill
 *Macon, Gideon Hunt (Hon.), GP ⁷⁴ Warrenton
 MacRae, John Donald, R ⁸ Asheville
 Maddrey, Milner Crocker, S ³³ Roanoke Rapids
 Mahoney, J. W., ObG ⁸ West Asheville
 Major, R. T., ALR ³⁶ Hendersonville
 *Maness, Archibald Kelly, Ob ³² Greensboro
 *Mann, Ira Thurman (Hon.), GP ³² High Point
 *Manning, Isaac Hall, Jr., I ²³ Durham
 Markham, Blackwell, S ²³ Durham
 Marlowe, William Anderson, GP ³¹ Walstonburg

~ Present at 1948 meeting.

† Deceased.

- Marr, James T., R ²⁵ Winston-Salem
 *Marr, Myron Whitmore (Hon.), I ⁵¹ Pinehurst
 Marsh, Frank Baker, I ⁶⁴ Salisbury
 *Marshall, James Flournoy, S ²⁵ Winston-Salem
 *Martin, Benjamin Franklin, I ²⁵ Winston-Salem
 Martin, Donald Stover, Pd ²³ Durham
 Martin, James Alfred (Hon.), Pd ⁶² Lumberton
 *Martin, John Floyd (Hon.), OALR ³⁴ Dunn
 †Martin, John Henry (Hon.), GP ²⁴ Red Oak
 Martin, John R., GP ⁵⁴ Holly Ridge
 *Martin, Lester Poindexter, OALR ²⁵ Mocksville
 *Martin, Moir Saunders (Hon.), S ⁶⁹ Mt. Airy
 Martin, Ruth Campbell, Anes ²³ Durham
 Martin, Thomas Adrian, Oph ⁷³ Raleigh
 *Martin, William Francis, S ⁴⁹ Charlotte
 Masland, Richard L., N ²⁵ Winston-Salem
 Mason, Manly, GP ¹² Newport
 Massengill, Paul R., OALR ⁷³ Raleigh
 Massey, Charles Caswell, Pr ⁴⁹ Charlotte
 *Matheson, Joseph Gaddy, OALR ³⁷ Ahoskie
 *Matheson, Robert Arthur, GP ³⁸ Raeford
 Mathews, Robert William, I ³² Greensboro
 *Mathiesen, Kenneth Marlin, GP ¹⁴ Pittsboro
 Matros, Nathaniel Hamilton, S ⁸ Asheville
 Matthews, George P., GP ²² Rose Hill
 *Matthews, Hugh Archie ³⁵ Canton
 Matthews, James H., T ⁸ Asheville
 Matthews, Vann Marshall, Ob ⁴⁹ Charlotte
 *Matthews, Wallace Russell, Pd ⁸ Asheville
 *Matthews, William Camp, I ⁴⁹ Charlotte
 Matthews, William S., GP ²⁷ Bessemer City
 Matthews, William W. (Hon.), GP ⁶³ Leaksville
 Maulden, Paul Ranzo, S ¹⁰ Kannapolis
 Mauzy, Charles Hampton, Jr., ObG ²⁵ Winston-Salem
 Mayer, Walter Brem, D ⁴⁹ Charlotte
 *McAdams, Charles Rupert (Hon.), GP ²⁷ Belmont
 McAlister, Jean Colvin, Pd ³² Greensboro
 *McAllister, Hugh Alexander, ObG ⁶² Lumberton
 *McAnally, James McGehee, S ⁶³ Reidsville
 McAnally, William Jefferson (Hon.), GP ³² High Point
 McBee, Paul Thomas, S ⁴⁸ Marion
 McBride, M. H. (Hon.) ⁶³ Reidsville
 McBryde, Angus Murdock, Pd ²³ Durham
 McCain, Walkup Kennard, GP ³² High Point
 McCain, William R. (Hon.), GP ³² High Point
 McCall, Alvin Clay (Hon.), OALR ⁸ Asheville
 McCall, William Herbert, OALR ⁸ Asheville
 McCarty, Ralph L., S ⁴⁹ Charlotte
 McChesney, William Wallace, Ob ²⁷ Gastonia
 McCles, Edward Chadwick, GP ⁷⁷ Elm City
 McClelland, Joseph O. (Hon.), GP ⁶² Maxton
 McConnell, Harvey Russell, S ²⁷ Gastonia
 McCotter, St. Elmo (Hon.), Ob ⁵⁵ Bayboro
 McCoy, Thomas Marshal (Hon.), GP ⁴⁹ Charlotte
 McCracken, John Rufus (Hon.), OALR ³⁵ Waynesville
 McCracken, Joseph Pickett, I ²³ Durham
 McCuiston, Allen Masten (Hon.), Pr ⁷⁵ Mt. Olive
 McCutchan, Frank, OALR ⁶⁴ Salisbury
 *McCutcheon, William Benson, S ²³ Durham
 McDade, Brodie Banks, Ob ¹ Burlington
 McDonald, Angus Morris, U ⁴⁹ Charlotte
 McDonald, Lester Bowman, GP ³⁶ Hendersonville
 *McDonald, Robert Lacy, GP ²¹ Thomasville
 *McDowell, Harold Clyde, Or ²⁵ Winston-Salem
 *McDowell, Roy Hendrix, PH ²⁷ Belmont
 McDowell, William Kitchin, OALR ⁴⁵ Tarboro
 McEachern, Duncan Roland, GP ⁵² Wilmington
 McElroy, James Lawrence, GP ⁴⁶ Marshall
- *McElwee, Ross Simonton (Hon.), R ³⁹ Statesville
 *McFadyen, Oscar Lee, Jr., I ²⁰ Fayetteville
 McGee, Julian Murrill, GP ³² Greensboro
 *McGee, Robert Louis, S ⁷³ Raleigh
 McGimsey, James F., Jr., GP ¹⁵ Andrew
 *McGowan, Claudius, I ⁴⁷ Plymouth
 McGowan, Joseph Francis, OALR ⁸ Asheville
 McGrath, Frank Bernard, Pd ⁶² Lumberton
 McGuffin, William Christian, GP ⁸ Asheville
 *McIntosh, Donald Munro (Hon.), S ⁴⁸ Old Fort
 McIntosh, Donald Munro, Jr., GP ⁴⁸ Marion
 McIntosh, William Rufus, GP ⁶¹ Rockingham
 McIntyre, Stephen, S ⁶² Lumberton
 *McIver, Lynn (Hon.), GP ⁴² Sanford
 McKay, Clinton Hull, I ⁴⁹ Charlotte
 *McKay, Hamilton Witherspoon (Hon.), U ⁴⁹ Charlotte
 *McKay, Robert Witherspoon, U ⁴⁹ Charlotte
 *McKay, William Peter, OALR ²⁰ Fayetteville
 *McKee, John Sasser, Jr., P ⁹ Morganton
 McKee, Lewis Middleton, I ²³ Durham
 *McKenzie, Benjamin Whitehead, S ⁶⁴ Salisbury
 McKenzie, Wayland Nash, PH ⁶⁸ Albemarle
 *McKinnon, W. J. ² Wadesboro
 *McKnight, Roy Bowman, S ⁴⁹ Charlotte
 McLain, Crawford E., Ind ³⁵ Canton
 *McLain, John Edward Gorsuch, T ⁷⁷ Wilson
 McLamb, George Thomas, GP ¹ Mebane
 McLaughlin, Calvin Sturgis (Hon.), GP ⁴⁹ Charlotte
 McLaughlin, Calvin Sturgis, Jr., GP ⁴⁹ Charlotte
 McLean, Ewen Kenneth, Pd ⁴⁹ Charlotte
 McLelland, William Davies, GP ³⁹ Mooresville
 McLemore, George A. (Hon.), GP ⁴¹ Smithfield
 McLendon, Walter, GP ⁶⁸ Oakboro
 †McLeod, Alexander H. (Hon.), S ⁵¹ Aberdeen
 *McLeod, John Purl Utley, U ⁷¹ Marshville
 McLeod, Junius Hazel, GP ²⁰ Fayetteville
 *McLeod, Mary Margaret, Pd ⁴² Sanford
 *McLeod, Vida Canady, GP ⁵¹ Southern Pines
 McLeod, William Lewis, GP ⁶⁸ Norwood
 McMahan, Francis J., Pr ⁸ Asheville
 *McManus, Hugh Forrest, Jr., GP ⁷³ Raleigh
 *McMillan, Robert Lindsay, C ²⁵ Winston-Salem
 *McMillan, Robert M., I ⁵¹ Southern Pines
 *McMillan, Roscoe Drake (Hon.), GP ⁶² Red Springs
 McNeill, Claude Ackle, GP ⁶⁹ Elkin
 *McNeill, James Hubert, I ⁷⁶ North Wilkesboro
 *McPheeters, Samuel Brown, PH ⁷⁵ Goldsboro
 *McPherson, Charles Wade (Hon.), OALR ¹ Burlington
 *McPherson, Samuel Dace (Hon.), OALR ²³ Durham
 McRae, Cameron F., GP ⁵⁰ Burnsville
 *Meade, Forest C., S ³⁹ Statesville
 Meadows, J. H., OALR ⁷⁷ Wilson
 Meads, Manson, I ²⁵ Winston-Salem
 Mears, George Augustus, S ⁸ Asheville
 Mebane, William Carter, Jr., S ⁵² Wilmington
 Medlin, La Rue M. ¹⁸ Tabor City
 Mees, Theodore H., I ⁶² Lumberton
 Menefee, Elijah Eugene, Jr., I ²³ Durham
 Menzies, Henry Harding, ObG ²⁵ Winston-Salem
 *Merritt, Jesse Fred, GP ³² Greensboro
 Metcalf, Lawrence E., Pd ⁸ Asheville
 Mewborn, John Moses, GP ⁵⁸ Farmville
 *Meyers, Paul T., R ⁴³ Kinston
 Miale, John B., Path ²³ Chapel Hill
 *Michal, Mary Barrows Harris, Pd ³⁵ Waynesville
 Miles, May Sallie (Hon.), GP ³² Greensboro

- Present at 1948 meeting.

† Deceased.

Miles, Walter W., GP 76	Purlear
*Milham, Claude Gilbert, T 61	Hamlet
Millender, Charles White, S 8	Asheville
Miller, Harry, GP 15	Murphy
Miller, Henry R., GP 8	Swannanoa
Miller, John Floyd, S 48	Marion
Miller, Lloyd D., GP 48	Marion
Miller, Oscar Lee, Or 49	Charlotte
†Miller, Robert Bascom (Hon.) Pd 75	Goldsboro
*Miller, Robert Carlyle 27	Gastonia
*Miller, Robert P., S 49	Charlotte
*Miller, Walton H., Jr., GP 75	Goldsboro
*Miller, Warren Edwin, S 18	Whiteville
*Milliken, James Shepard (Hon.), GP 51	Southern Pines
Mills, Charles Rose, Oph 32	Greensboro
Mills, Hugh H. 65	Forest City
Mills, James C. 76	North Wilkesboro
*Mitchell, George William (Hon.) GP 77	Wilson
Mitchell, Gurney Talmage, GP 76	Wilkesboro
Mitchell, Landis Patterson 65	Spindale
Mitchell, Paul Hayne (Hon.), GP 37	Ahoskie
Mitchell, Robert Hartwell 27	Gastonia
Mitchell, Roy Colonel, I 69	Mt. Airy
Mitchell, Thomas Brice, GP 17	Shelby
Mitchener, James Samuel (Hon.), OALR 73	Raleigh
*Mobbs, Robert F. 51	Pinehurst
*Mock, Charles Glenn 64	Salisbury
*Mock, Frank Lowe (Hon.), GP 21	Lexington
*Monk, Henry Lawrence (Hon.) 64	Salisbury
*Monroe, Clement Rosenburg, S 51	Pinehurst
*Monroe, Lance Truman, ObG 10	Kannapolis
*Montgomery, John Christian, Anes 49	Charlotte
Moore, Alexander Wylie (Hon.), S&G 49	Charlotte
Moore, Burmah Dixon, GP 27	Mt. Holly
Moore, Donald Bain (Hon.), Ind 68	Badin
Moore, D. Forrest, ObG 17	Shelby
Moore, Davis Lee, GP 58	Winterville
Moore, Edward E., Oph 8	Asheville
Moore, Ernest Victor, Pd 17	Shelby
*Moore, Henry Blanchard, G 1	Burlington
*Moore, Julian Alison, S 8	Asheville
*Moore, Kinchen Carl, PH 67	Laurinburg
Moore, Laurie Walker 12	Beaufort
*Moore, Oren (Hon.), G 49	Charlotte
*Moore, Robert Alexander (Hon.), Or 25	Winston-Salem
Moore, Robert Ashe, Pd 49	Charlotte
Moore, Robert Love, GP 27	Bessemer City
Moore, Roy Hardin, GP 35	Canton
†Moore, William Houston (Hon.), Ob 52	Wilmington
*Morefield, Robert Hoyle 10	Kannapolis
Morecai, Alfred, PH 25	Winston-Salem
*Morehead, Robert Page, Path 25	Winston-Salem
Morey, Milton B., GP&S 12	Morehead City
*Morgan, Arthur E., R 20	Fayetteville
*Morgan, Burnice Earl, GP 8	Asheville
*Morgan, Grady Alexander, I 8	Asheville
*Morgan, William Gardner, PH 23	Chapel Hill
*Moricle, Charles Hunter, S 63	Reidsville
Morgenstern, Philip, T 8	Black Mountain
*Morris, John Watson, S 12	Morehead City
Morris, Joseph A. (Hon.), GP 26	Franklinton
Morris, Rae Henderson, S 10	Concord
Morris, Thomas A., Jr., GP 61	Hamlet
Morrison, James Rudy, GP 39	Statesville
Morton, L. Thomas, OALR 44	Lincolnton
Moseley, Zebulon Vance (Hon.), PH 43	Kinston
*Moss, George Oren, Ind 65	Cliffside
* Present at 1948 meeting.	
† Deceased.	
Motley, Fred Elliot, ALR 49	Charlotte
*Mudgett, William Chase (Hon.), I 51	Southern Pines
Mumford, A. M. 58	Winterville
*Munroe, Colin A., S 49	Charlotte
Munroe, Henry Stokes (Hon.), S 49	Charlotte
Munroe, Henry Stokes, Jr., S 49	Charlotte
Munt, Herbert Frederick (Hon.), Or 25	Winston-Salem
*Murchison, David Reid, I 52	Wilmington
*Murphy, Gibbons Westbrook, R 8	Asheville
Murphy, Robert Jennings, Jr., Pd 9	McCain
Murrah, Thomas A., III, Hosp. Res. 49	Charlotte
Murray, E. Cotter, GP 33	Roanoke Rapids
*Murray, Robert Lebby, GP 38	Raeford
Myers, Dwight Loftin, GP 39	Harmony
Myers, Jack D., I 23	Durham
*Myers, Holland Thomas 21	Lexington
Nailing, Richard C., S 8	Asheville
Nalle, Brodie Crump (Hon.), ObG 49	Charlotte
*Nalle, Brodie Crump, Jr., U 49	Charlotte
*Nance, Charles Lee, GP 49	Charlotte
*Nance, James Edwin, OALR 10	Kannapolis
Nanzetta, Leonard, GP 25	Rural Hall
*Nash, John Frederick (Hon.), GP 62	St. Pauls
*Naumoff, Philip, GP 49	Charlotte
Neal, Douglas, S 49	Charlotte
*Neal, J. Walter, S 73	Raleigh
Neal, Kemp Prather, S 73	Raleigh
*Neblett, Herbert Clarence, Oph 49	Charlotte
*Neese, Jack Harrell, S 71	Monroe
*Neese, Kenneth Earle, GP 71	Monroe
Nelson, William Howell, GP 66	Clinton
Neville, Cecil Howell, GP 33	Scotland Neck
Newbold, H. L., I 13	Newton
Newcomb, Andrew Purefoy, Jr., GP 72	Henderson
Newell, Hodge Albert (Hon.), OALR 72	Henderson
Newell, Leon Burns (Hon.), GP 49	Charlotte
Newland, Charles Logan, S 70	Brevard
Newman, Glenn C., I 66	Clinton
Newman, Harold Hastings (Hon.), S 64	Salisbury
Newman, Harold Hastings, Jr., GP 64	Salisbury
Newsome, Henry Clay, GP 69	Pilot Mountain
*Newton, Howard Lowell, GP 49	Charlotte
Newton, William King, OALR 76	North Wilkesboro
Nichols, Alvan Alexander (Hon.), GP 40	Sylva
Nichols, Asbury S. (Hon.), GP 40	Sylva
Nichols, Austin Flint (Hon.), GP 57	Roxboro
*Nichols, Rhodes Edmond, Jr., I 23	Durham
*Nichols, Thomas Rogers, I 9	Morganton
Nicholson, Neill Graham, Sr., OALR 61	Rockingham
Nicholson, Plummer A. (Hon.), Ob 5	Washington
*Nicholson, William McNeal, I 23	Durham
Nisbet, Douglas Heath, I 49	Charlotte
Noble, Robert Primrose (Hon.), R 73	Raleigh
*Noblin, Roy Lee, GP 30	Oxford
*Noel, William Walter, S 72	Henderson
Noell, Robert Holman, GP 24	Rocky Mount
*Nolan, James Onslow, GP 10	Kannapolis
Norburn, Charles Strickland, S 8	Asheville
Norburn, Russell Lee, S 8	Asheville
*Norfleet, Charles Millner, Jr., U 25	Winston-Salem
Norfleet, Edgar Powell, Pd 6	Roxobel
Norman, J. Standing, OALR 27	Gastonia
*Norment, William Blount, S 32	Greensboro
*Norris, Charles Bradley, I 49	Charlotte
Norris, Francis Loran, GP 22	Beulaville
*Northington, James Montgomery (Hon.), I 49	Charlotte

*Northup, Edwin Charles, GP 34	Lillington	Patterson, Hubert C., S 23	Durham
*Norton, John W. R., PH 23	Raleigh	Patterson, Joseph Flanner (Hon.), S 19	New Bern
Norwood, Ballard, Jr., PH 30	Oxford	*Patterson, Joseph Halford, GP 42	Broadway
Nowell, James S., GP 26	Franklinton	Patton, William Hugh, Jr., GP 9	Morganton
Nowell, S. C., GP 13	Hickory	Pay, Wilson Cyrus, GP&S 36	Hendersonville
Nowlin, George Preston, S 49	Charlotte	*Payne, E. Louise, ObG 73	Raleigh
*O'Briant, Albert Lee, GP 38	Raeford	*Payne, John Abb, III, GP 28	Sunbury
Odom, Guy L., NS 23	Durham	*Peabody, Carroll A., GP 68	Norwood
Odom, Robert Taft, S 25	Winston-Salem	Peacock, Roy Merritt, GP 8	Asheville
Oehlbeck, Luther William, R 9	Morganton	Pearse, Richard Lehmer, ObG 23	Durham
*Oelrich, August M., S 42	Sanford	Pearson, Arthur A. 18	Hickory
*Offutt, Vernon Delmus, I 43	Kinston	*Peasley, Elmus Day, Path 8	Asheville
Ogburn, Herbert Hammond (Hon.), S 32	Greensboro	*Peck, Harold A., R 62	Lumberton
*Ogburn, Lundie Calvin, ObG 25	Winston-Salem	*Peele, James Clarendon 43	Kinston
Ohle, E. R., GP 50	Celo	Peeler, Clarence N. (Hon.), ALR 49	Charlotte
*Oleen, George G. 71	Monroe	Peeler, John H. (Hon.), Ob 64	Salisbury
Oliver, Adlai Stevenson, ObG 73	Raleigh	*Peete, Charles Henry (Hon.), Ob 74	Warrenton
Oliver, Adlai Stevenson, Jr., ObG 73	Raleigh	*Pegg, Fred Grant, PH 25	Winston-Salem
Oliver, Joseph Andrew, GP 64	Rockwell	Pennington, Glenn Walton, ALR 49	Charlotte
Oliver, R. K., T 38	McCain	*Perry, David Russell, I 23	Durham
Orgain, Edward Stewart, C 23	Durham	Perry, David Russell, Jr., Pd 23	Durham
*Ormand, John William, ALR 71	Monroe	Perry, Ernest Monroe (Hon.), Oph 24	Rocky Mount
Ormond, Allison Lee, T 13	Hickory	Perry, Glenn Grey, S 32	High Point
*Orr, Charles Collins (Hon.), I 8	Asheville	Perry, Henry B., GP 3	Boone
Osborne, Joseph Evans, S 70	Rosman	Perry, Henry Baker, Jr., GP 3	Boone
Outland, Robert Boone, GP 53	Rich Square	*Perry, Robert E. 32	Greensboro
*Outlaw, Jackson Kent, OALR 68	Albemarle	*Perryman, Olin C., GP 25	Winston-Salem
Owen, Charles Fletcher, Jr., S 35	Canton	Persons, Elbert Lapsley, I 23	Durham
Owen, Duncan Shaw, I 20	Fayetteville	Peters, August Richard, Jr., Pd 5	Washington
Owen, John Fletcher, NP 73	Raleigh	Peters, David B., S 8	Asheville
Owen, Margaret Lineberry, G 35	Canton	†Peters, William Anthony (Hon.), S 56	Elizabeth City
Owen, Robert Harrison, S 35	Canton	*Peters, William Anthony, Jr. 56	Elizabeth City
Owen, W. Boyd, GP 35	Waynesville	*Peterson, Charles A. (Hon.), GP 50	Spruce Pine
*Owens, Francis Leroy, S 51	Pinehurst	Petteway, George Henry (Hon.), GP 49	Charlotte
*Owens, Zack Doxey, S 56	Elizabeth City	Pettit, H. S., R 27	Gastonia
*Ownbey, Arthur Dennis, GP 32	Greensboro	Pettus, William Henry, Jr., S 49	Charlotte
*Pace, Karl Busbee, GP 58	Greenville	Pfohl, Samuel Frederick (Hon.), GP 25	Winston-Salem
Pace, Samuel Eugene, GP 63	Leaksville	Phelps, John Mahlon, I 47	Creswell
Padgett, Charles King, GP 17	Shelby	*Phifer, Edward W., S 9	Morganton
Padgett, Philip Grover, Pd 17	Kings Mountain	†Phillips, Charles Hoover (Hon.), GP 21	Thomasville
Page, William Gordon, S&GP 44	Lincolnton	Phillips, David Lawrence, GP 50	Spruce Pine
Painter, William Watson, S 39	Mooresville	*Phillips, Ernest Nicholas, GP 76	North Wilkesboro
Palmer, Horace, GP 33	Littleton	Phillips, S. J., PH 58	Greenville
Palmer, Marion Cherigney (Hon.) 59	Tryon	Pickard, H. M., I 52	Wilmington
Palmer, Yates Shuford, S 9	Valdese	*Pickrell, Kenneth L., S 23	Durham
*Palmgren, Einar Alexander, Jr. 49	Charlotte	*Pigford, R. T., I 52	Wilmington
Papineau, Alban, T&GP 47	Plymouth	Pine, Irving, T 8	Oteen
*Parker, Herman Richard, GP 32	Greensboro	Pipes, David McKowan, A 8	Asheville
Parker, James Jarvis, GP 56	Elizabeth City	*Pishkoe, M. T., S 51	Pinehurst
*Parker, James Roy, OALR 62	Lumberton	Pittman, Earl Eugene, I 47	Oak City
*Parker, Oscar Lee, OALR 66	Clinton	*Pittman, Malory Alfred, Or 77	Wilson
*Parker, Paul Godwin (Hon.), GP 34	Erwin	*Pittman, Raymond Lupton (Hon.), S 20	Fayetteville
Parker, Shepherd Falkener, GP 17	Shelby	Pittman, William Austin, OALR 20	Fayetteville
Parker, Wade Thomas, S 20	Fayetteville	*Pitts, William Reid, S 49	Charlotte
Parks, Walter Beatty, Ind 27	Gastonia	Piver, William C., GP 5	Washington
*Parks, William Craig, GP 32	High Point	*Pleasants, George D., GP 14	Siler City
Parrette, Nettie Coffey, GP 15	Robbinsville	Plonk, George W., GP 15	Murphy
Parrette, Richard Grenville, GP 15	Robbinsville	*Plummer, David Edwin, PH 21	Thomasville
Parrott, G. Fountain, I 43	Kinston	Plyler, Ralph Johnson, S 64	Salisbury
Parrott, John Arendall, Ob 43	Kinston	Pollock, Raymond A. (Hon.), GP 19	New Bern
†Parrott, William Thomas (Hon.), GP 43	Kinston	*Pool, Bennette Baucom, A 25	Winston-Salem
*Parsons, William Herbert, GP 61	Ellerbe	*Pool, Charles Glenn, Pd 25	Winston-Salem
Parsons, L. J., GP 62	Lumberton	Poole, Marvin Bailey 34	Dunn
Parsons, W. S., U 73	Mobile, Ala.	Poole, P. P., I 24	Rocky Mount
*Paschal, George W., Jr., S 73	Raleigh	Porter, Richard A. 36	Hendersonville
Pate, Archibald Hanes 75	Goldsboro	Postlethwait, Raymond Woodrow, S 25	Winston-Salem
Pate, James Frank, GP 35	Canton	Pott, W. H., ObG 58	Greenville
*Pate, James Gibson (Hon.), GP 67	Gibson		
*Patman, William Louis, S 14	Siler City		
*Patterson, Fred Geer, I 23	Chapel Hill		
*Patterson, Fred Marion, U 32	Greensboro		
*Patterson, F. M. Simmons, S 62	Laurinburg		

~ Present at 1948 meeting.

† Deceased.

- *Potter, E. Lindsay, Jr., GP 49 Charlotte
 Powell, Albert Henry, GP 23 Durham
 *Powell, C. J., GP 52 Wilmington
 *Powell, E. Charles, Jr., ObG 75 Goldsboro
 Powell, Herman Sutton, GP 27 Gastonia
 Powell, Jesse Averette (Hon.), GP 16 Edenton
 *Powell, William F., OALR 8 Asheville
 *Powers, Frank Poydras, ALR 73 Raleigh
 Prather, F. G., GP 8 Asheville
 *Prefontaine, J. Edouard, OALR 32 Greensboro
 *Pressly, David, I & Pd 39 Statesville
 Pressly, James Lowry, GP 39 Statesville
 *Preston, John Zenas, GP 59 Tryon
 Prince, George, Pd 27 Gastonia
 *Printz, Don R., D 8 Asheville
 Pritchard, George Littleton, GP 43 Black Mountain
 *Procter, Ivan Marriott (Hon.), ObG 73 Raleigh
 Profitt, Ray V., T 8 Asheville
 Prusa, Victor H., GP 4 Banner Elk
 *Pugh, Charles Harrison (Hon.) GP 27 Gastonia
 Purdy, James Jarrett (Hon.), GP 55 Oriental
 Putney, Robert Hubbard, Sr., GP 77 Elm City
 Putney, Robert Hubbard, Jr., GP 77 Elm City
 Query, Richard Zimri, Jr., I 49 Charlotte
 Quickel, John Cephas, OALR 27 Gastonia
 Quincy, Fred Ben, Ob & Pd 50 Williamson, W. Va
 Quinn, David E., 8 Dublin, Ga.
 Rabold, Bernard Louis, S 13 Newton
 *Raby, James Grover (Hon.), Pd. 24 Tarboro
 Raby, William Thomas, Hosp. Res. 24 Baltimore, Md.
 Raiford, Theodore S., S 8 Asheville
 *Rainey, William Thomas (Hon.), I 20 Fayetteville
 Rand, Cecil Holmes, Ob 75 Fremont
 Ramsay, James Graham, S 5 Washington
 Ramsaur, Jackson Townsend, OALR 65 Rutherfordton
 Ramseur, William Lee, GP 17 Kings Mountain
 Randleman, D. A., GP 64 Salisbury
 Raney, Richard Beverly, Or 23 Durham
 *Rankin, Pressly Robinson (Hon.), GP 68 Mt. Gilead
 Rankin, R. B., 10 Concord
 Rankin, Samuel Wharton (Hon.), OALR 25 Winston-Salem
 Rankin, Watson Smith (Hon.), PH 49 Charlotte
 *Ranson, John Lester, Sr. (Hon.), Anes 49 Charlotte
 Ranson, John Lester, Jr., Anes 49 Charlotte
 Raper, J. S., R 8 Asheville
 Rapp, Ira H., S 49 Charlotte
 Rasberry, Edwin Albert, GP 31 Snow Hill
 Rathbun, Lewis S., ObG 8 Asheville
 *Ravenel, Samuel Fitzsimmons, Pd 32 Greensboro
 Ray, Frank Leonard, U 49 Charlotte
 Ray, John B. (Hon.), GP 63 Leaksville
 Ray, Ritz Clyde, GP 3 West Jefferson
 *Reavis, Charles William 32 Greensboro
 Redding, John O., GP 60 Asheville
 Redwine, James Daniel 21 Lexington
 *Reece, John C., Path 9 Morganton
 Reeser, A. W., GP 63 Spray
 *Reeves, James LeRoy, GP 20 Hope Mills
 Reeves, Jerome Lyda, GP 35 Canton
 *Reeves, Riley Jefferson, GP 8 Leicester
 Register, John Francis, O 32 Greensboro
 Reeves, Robert James, R 23 Durham
 Reid, Calvin Graham, I 49 Charlotte
 *Reid, Charles Hamilton, Jr., I 25 Winston-Salem
 Reid, James William (Hon.) (GP 27 Lowell
 Reid, Ralph Connor, S 49 Charlotte
 Reinhardt, James Franklin, I 44 Lincolnton
 Reitzel, Claude Everett (Hon.), GP 32 High Point
 Reynolds, Carl Vernon (Hon.), PH 73 Raleigh
 Reynolds, Ernest Harold, GP 63 Reidsville
 Rhodes, James Slade (Hon.), I 47 Williamston
 *Rhodes, James Slade, Jr., I 47 Williamston
 *Rhodes, John Sloan, U 73 Raleigh
 *Rhudy, Booker Ephram, R 32 Greensboro
 Rhyne, Robert Edgar (Hon.), PH 27 Gastonia
 Rhyne, Sam Albertus, GP 39 Statesville
 Ribet, James Ernest 9 Valdese
 *Rice, Edmond Lee, S 27 Gastonia
 Richardson, Ernest G., Jr., GP 19 New Bern
 *Richardson, Frank Howard, Pd 8 Black Mountain
 *Richardson, J. J., S 67 Laurinburg
 *Richardson, William Perry, GP 23 Chapel Hill
 *Ricks, Leonard E. (Hon.), GP 62 Fairmont
 Ridge, Clyde Franklin 32 High Point
 *Riggs, M. M., GP 9 Drexel
 *Riggsbee, Arthur Eugene (Hon.), GP 23 Durham
 Riggsbee, John B., GP 23 Chapel Hill
 *Riner, C. R., GP 32 Greensboro
 Ring, Louis J., GP 8 Black Mountain
 Ringer, Paul Henry (Hon.), T 8 Asheville
 Roach, Leonard H., ObG 8 Asheville
 Roberson, E. L., S 24 Tarboro
 *Roberson, Foy (Hon.), S 23 Durham
 Roberson, Robert Stuart, GP 35 Waynesville
 *Roberts, Bennett Watson, Pd 23 Durham
 Roberts, Bryan Nazer, GP 23 Hillsboro
 *Roberts, Louis Carroll, U 23 Durham
 Roberts, R. Winston, Oph 25 Winston-Salem
 Roberts, William McKinley, Or 27 Gastonia
 Robertson, Carroll Bracey 33 Jackson
 *Robertson, Edwin Mason, S 23 Durham
 *Robertson, James Farish (Hon.), S 52 Wilmington
 Robertson, James Mebane, GP 39 Harmony
 *Robertson, John Newton, OALR 20 Fayetteville
 Robertson, Leon W., GP 24 Rocky Mount
 Robertson, Lloyd Harvey 64 Salisbury
 Robertson, Logan T., Hosp. Ad. 8 Asheville
 Robinson, Charles Wilson, GP 49 Charlotte
 Robinson, Donald Edward, Pd 1 Burlington
 Robinson, James Lee, S 27 Gastonia
 *Robinson, John Daniel, GP 22 Wallace
 Robinson, William Ashby 48 Old Fort
 Robinson, W. J., GP 3 Creston
 Robinson, W. Locke, GP 46 Mars Hill
 Rodda, John S., GP 15 Andrews
 Rodman, Clark, GP 5 Washington
 Rodman, Robert Boyd, I 52 Wilmington
 *Rodwell, Eleanor, GP 23 Durham
 Rogers, Gaston Wilder, PH 23 Chapel Hill
 *Rogers, Max Pritchard, S 32 High Point
 Rollins, Charles Dick 72 Henderson
 Rollins, Vance Benton 72 Henderson
 *Root, Aldert Smedes (Hon.), Pd 73 Raleigh
 Rose, Abraham Hewitt (Hon.), GP 41 Smithfield
 *Rose, David Jennings, S 75 Goldsboro
 *Rose, James William, GP 75 Pikeville
 Rosenbaum, Maurice Milton S 52 Long Beach, California
 Ross, George Floyd, GP 46 Hot Springs
 Ross, Otho Bescant (Hon.), R 49 Charlotte
 Ross, Robert Alexander, ObG 23 Durham
 Ross, Thomas Wallace, GP 49 Charlotte
 *Rosser, Robert Guthrie (Hon.), GP 51 Vass
 Rosser, Robert Guthrie, Jr., I 23 Durham
 *Rousseau, James Parks, R 25 Winston-Salem
 Rowe, George C., GP 48 Marion

Rowe, Virginia Copeland, GP 48	Marion	Shuford, Jacob Harrison, GP 13	Hickory
*Royal, Benjamin F. (Hon.), S 12	Morehead City	Shuford, Mary Frances, Path 8	Asheville
*Royal, Donnie Martin, GP 66	Salemburg	Shuler, Edward L. 8	Asheville
Royall, M. A. (Hon.), OALR 69	Elkin	Shuler, James Edward, GP 23	Durham
Royster, Chauncey Lake, GP 73	Raleigh	*Shull, Joseph Rush (Hon.), R 49	Charlotte
Royster, Hubert Ashley (Hon.), S 73	Raleigh	*Sidbury, James Buren (Hon.), Pd 52	Wilmington
Royster, J. D., GP 41	Benson	*Sikes, Charles Henry, GP 32	Greensboro
†Royster, Stephen Sampson (Hon.), GP 17	Shelby	Sikes, Gibson L. (Hon.), GP 66	Salemburg
Royster, Thomas Hays (Hon.), OALR 24	Tarboro	*Silver, George A., P 23	Durham
*Ruark, Robert James, ObG 73	Raleigh	Simmons, Alexander Wingate, GP 1	Burlington
Rubin, Adrian Stevens, Pd 32	Greensboro	Simons, Claude Ernest, I 77	Wilson
†Rucker, Adin Adam (Hon.), GP 65	Rutherfordton	*Simpson, Henry Hardy, GP 1	Elon
Rudd, Paul Dalton, I 63	Reidsville	Simpson, Paul Ervin, ObG 73	Raleigh
*Ruffin, David Winston, GP 43	Pink Hill	*Sinclair, Lewis Gordon, S 73	Raleigh
Ruffin, Jennings Bryan 37	Ahoskie	*Sinclair, Roby Thomas, Jr., GP 52	Wilmington
*Ruffin, Julian Meade, I 23	Durham	Singletary, George Currie (Hon.), GP 7	Clarkton
Rundles, R. Wayne, I 23	Durham	Sink, Charles Shelton	
Russell, Charles R. (Hon.), GP 11	Granite Falls	(Hon.), GP 76	North Wilkesboro
Russell, Jesse Milton (Hon.), Pd 35	Canton	*Sisk, Crete Nixon, PH 9	Morganton
Russell, Lloyd Pacemas, GP 36	Fletcher	*Siske, Grady Cornell, GP 32	Pleasant Garden
Russell, William Marler, OALR 8	Asheville	Skeen, Leo Brown, GP 39	Mooreville
*Sabiston, Frank, OALR 43	Kinston	*Skinner, Benjamin S., Pd 23	Durham
Sader, Julius, GP 70	Brevard	Slagle, T. D., GP & S 40	Sylva
Sadler, Ralph Calvert (Hon.), GP 18	Whiteville	*Slate, John Samuel (Hon.), GP 25	Winston-Salem
Salle, George F., GP 5	Washington	Slate, John William, GP 32	High Point
*Salley, Edward McQueen		Slate, Joseph Esmond, GP 32	High Point
(Hon.), ObG 36	Hendersonville	*Slate, Marvin Longworth, GP 32	High Point
Salmons, Henry Clay (Hon.), GP 69	Elkin	Sloan, Allen Barry, GP 39	Mooreville
Salters, Theodore, GP 12	Beaufort	Sloan, David Bryan, OALR 52	Wilmington
Salters, Frederic Hay,		Sloan, Henry Lee, Oph 49	Charlotte
OALR 56	Elizabeth City	Sloan, William Henry GP 66	Garland
Sample, Robert Cannon, GP 36	Hendersonville	Sloop, Eustace H. (Hon.), GP 4	Crossnore
*Sams, William Albert, GP 46	Marshall	Sluder, Fletcher S., ObG 8	Asheville
*Sanders, L. H., Pd 73	Raleigh	Sluder, Harold M., GP 8	Leicester
*Sanger, W. Paul, S 49	Charlotte	Small, Victor Roy, GP 66	Clinton
Saunders, John Turner, Or 8	Asheville	*Smart, Gardner F., OALR 8	Asheville
Saunders, Sheldon Asa, GP 6	Aulander	Smerznak, John Joseph, GP 10	Concord
*Saunders, Stanley Stewart, Pd 32	High Point	Smethie, William, S 24	Wadesboro
*Sawyer, L. Everett 56	Elizabeth City	Smith, Alice Thomas (Hon.), GP 32	Greensboro
Schaffle, Karl, I 8	Asheville	Smith, Anderson Jones, GP 77	Black Creek
Schallert, Paul Otto (Hon.), GP 25	Orlando, Fla.	*Smith, Annie Thompson, GP 23	Durham
*Schenk, Sam Moore, S 17	Shelby	Smith, Bernard Reid (Hon.), I 8	Asheville
*Schiebel, Herman Max, S 23	Durham	Smith, Claiborne Thweat, I 24	Rocky Mount
*Schoenheit, Edward William, I 8	Asheville	Smith, David Clark, I 64	Salisbury
*Schweizer, Donald Conrad, ObG 32	Greensboro	*Smith, David Tillerson, I 23	Durham
*Scott, Allan F. 64	Salisbury	Smith, Edward Barney, GP 33	Enfield
Scott, Samuel Floyd, GP 1	Burlington	Smith, Erma A., I 23	Durham
Scruggs, William Henry, GP 15	Andrews	*Smith, Fitzhugh Lee, GP 1	Burlington
Scruggs, William Marvin, S 49	Charlotte	Smith, Foyle P., ObG 21	Lexington
Sealey, Will C., S 23	Durham	*Smith, Franklin Calton, Oph 49	Charlotte
*Seay, Hillis Ledbetter, T 49	Huntersville	Smith, George Marvin, GP 71	Monroe
*Seay, Thomas Waller, GP 64	Spencer	Smith, Gordon, GP 24	Rocky Mount
*Selby, William Elledge, GP 49	Charlotte	*Smith, Harold Benjamin, G 76	North Wilkesboro
*Selman, Joseph, R 25	Winston-Salem	Smith, Jay L., GP 64	Spencer
†Sessoms, Edwin Tate (Hon.), GP 66	Roseboro	Smith, J. Alexander (Hon.), S 21	Lexington
Severn, Henry D., Or 8	Asheville	Smith, James, GP 58	Greenville
Sevier, Joseph Thomas (Hon.), GP 8	Asheville	Smith, John Goodrich, I 24	Rocky Mount
*Shafer, Irving Everett (Hon.), GP 64	Salisbury	Smith, J. H., Path 52	Wilmington
*Sharp, Oliver Ledbetter, I 32	Greensboro	Smith, John McNeill (Hon.), GP 62	Rowland
*Sharpe, Charles Ray (Hon.), OALR 21	Lexington	Smith, Joseph, ObG 58	Greenville
Shaver, William Trantham, S 68	Albemarle	*Smith, Joseph Elmer, GP 6	Windsor
*Shaw, John Alexander, Pd 20	Fayetteville	Smith, Melvin Bowman, GP 60	Ramseur
*Shaw, Lloyd Roosevelt, GP 39	Statesville	*Smith, Opie Norris, I 32	Greensboro
Shelburne, Palmer Augustine, I 32	Greensboro	*Smith, Oscar Fennell	
Shepard, Joseph Lawrence, GP 62	Pembroke	(Hon.), GP 33	Scotland Neck
Shepard, Karl 32	High Point	Smith, Randall Collins 58	Ayden
Shepherd, Thomas Scott, GP 27	Dallas	*Smith, Robert Edwin 69	Mt. Airy
Sherrill, Herbert Rankin, GP 17	Shelby	*Smith, Roy Meadows, Pd 32	Greensboro
Sherrill, Phil Minnis, GP 21	Thomasville	Smith, Ruby A., I 23	Chapel Hill
Shields, William Ernest, GP 32	Stokesdale	Smith, Slade Alvah, OALR 18	Whiteville
Shinn, G. C. 64	China Grove	Smith, William Carey, GP 75	Goldsboro
*Shipley, J. L., OALR 56	Elizabeth City	Smith, William Franklin (Hon.),	
Shohan, Joseph, R 32	Greensboro	GP 18	Chadbourn

Present at 1918 meeting.

† Deceased.

- *Smith, William Gordon, S ²¹ Thomasville
 Smoot, James Edward (Hon.), GP ¹⁰ Concord
 *Snipes, Richard Dean, Ob ²⁰ Fayetteville
 *Soady, John Hostley, Pd ⁶⁰ Asheboro
 Sorrell, Furman Yates, GP ² Wadesboro
 Souther, W. E., GP ³⁶ Hendersonville
 *Southernland, Robert William, PN ⁴⁹ Charlotte
 *Sowers, Roy Gerodd, OALR ⁴² Sanford
 Sox, Carl Caughman, GP ⁴¹ Kenly
 †Spainhour, Ellis H. (Hon.), GP ²⁵ Winston-Salem
 *Sparrow, Harry Ward ³² Greensboro
 *Sparrow, Thomas DeLamar, S ⁴⁹ Charlotte
 Speas, Dallas C., GP ²⁵ Winston-Salem
 *Speas, William Paul (Hon.),
 Oph ²⁵ Winston-Salem
 *Speas, William Paul, Jr., GP ²³ Durham
 †Speed, Joseph Anderson (Hon.), GP ²³ Durham
 Speight, James Ambler (Hon.),
 GP ²⁴ Rocky Mount
 Spencer, Benjamin Decatur, GP ⁴⁹ Charlotte
 Spencer, Frederick Brunell (Hon.) ⁶⁴ Salisbury
 *Spicer, Richard Williams
 (Hon.), Ob ²⁵ Winston-Salem
 Spiggle, Charles Harold, GP ⁵⁸ Grimesland
 Spikes, Norman Owen, GP ²³ Durham
 Spoon, Samuel Clarence, ObG ¹ Burlington
 Sprinkle, Charles Nichols, GP ⁸ Weaverville
 Sprinkle, Lawrence T., GP ⁸ Weaverville
 *Sprunt, William Hutchinson, Jr.,
 S ²⁵ Winston-Salem
 *Squires, Claude Babbington, U ⁴⁹ Charlotte
 Stainback, William C., S & ObG ⁵⁴ Jacksonville
 *Stanfield, William Wesley, S ³⁴ Dunn
 *Stanford, Lois Foote, I ²³ Durham
 *Stanford, William Raney, I ²³ Durham
 Stanley, John Haywood (Hon.), GP ⁴¹ Four Oaks
 Stanton, T. M. (Hon.) ³² High Point
 Starling, Howard Montfort, S ²⁵ Winston-Salem
 *Starling, Wyman Plato, R ⁶⁶ Roseboro
 *Starr, Henry Frank (Hon.), Ins ³² Greensboro
 Stead, Eugene A., Jr., I ²³ Durham
 Stegall, John T., GP ³⁹ Statesville
 *Steiger, Howard P., D ⁴⁹ Charlotte
 Stelling, Richard Nunnally, GP ³² Greensboro
 *Stenhouse, Henry Merritt, Oph ⁷⁵ Goldsboro
 Stephenson, Bennett Edward, GP ⁵³ Rich Square
 Stevens, Alexander H., Jr., OALR ¹⁹ New Bern
 Stevens, Hamilton Wright, Jr., PH ¹ Wilson
 *Stevens, Joseph Blackburn, N&I ³² Greensboro
 Stevick, Charles Paul, PH ⁷³ Raleigh
 Stewart, Daniel Niven, Jr., GP ¹³ Hickory
 Stiff, A. Olin, GP ⁹ Valdese
 *Stimpson, Robert Tula, GP ²⁵ Winston-Salem
 Stirewalt, Neale Summers, GP ³² High Point
 Stocker, Frederick W., Oph ²³ Durham
 Stone, Marvin Lee, GP ²⁴ Rocky Mount
 *Stratton, James David, Oph ⁴⁹ Charlotte
 Straughan, John William ²² Warsaw
 *Street, Claudius Augustus, Pd ²⁵ Winston-Salem
 Stretcher, Robert Hatfield, S ³⁵ Waynesville
 Stricker, Robert L., Anes & GP ⁸ Asheville
 Strickland, Arthur Thomas, Ob ⁷⁷ Wilson
 Strickland, Edward F. (Hon.),
 GP ²⁵ Winston-Salem
 Strickland, Ernest Lee (Hon.), Pd ⁷⁷ Wilson
 Strickland, Horace Gilmore, OALR ³² Greensboro
 Stringfield, Thomas, GP ³⁵ Waynesville
 Stringfield, Thomas, Sr.
 (Hon.), Anes ³⁵ Waynesville
 Stroupe, Albertus Ula, Jr. ²⁷ Mount Holly
 *Strosnider, Charles Franklin
 (Hon.), I ⁷⁵ Goldsboro
 Stuck, P. L., GP ⁵² Wilmington
- * Present at 1948 meeting.
 * Deceased.
- *Stuckey, Charles L., I ⁴⁹ Charlotte
 *Styron, Charles W., I ⁷³ Raleigh
 *Suiter, Wester Ghio, GP ³³ Weldon
 *Suitt, Robert Burke, NP ⁸ Durham
 Sullivan, Joseph Timothy, GP ⁸ Asheville
 Summerlin, Harry, GP ⁶⁷ Laurinburg
 Summers, J. Dent, S ¹³ Hickory
 Summerville, Walter Monroe, Path ⁴⁹ Charlotte
 *Sumner, Emmett Ashworth, S ³² High Point
 *Sumner, George Herbert, PH ⁶⁰ Asheboro
 Sumner, Thomas W., GP ³⁶ Hendersonville
 Sutter, Renzo ⁶⁹ Mount Airy
 Swain, Wingate, GP & S ⁵² Shallotte
 Swann, Cecil Collins, ALR ⁸ Asheville
 Swann, Joseph Fuller (Hon.), GP ¹⁰ Kannapolis
 *Sweaney, Hunter McGuire, S ²³ Durham
 Swindell, Lewis Holmes, GP & S ⁵ Washington
 Swisher, Otto J., Jr., PH ⁷³ Raleigh
 Sykes, Charlie Louis, GP ⁶⁹ Pilot Mountain
 Sykes, Joy Verle, GP ²⁴ Rocky Mount
 Sykes, Ralph Judson, PH ⁶⁹ Mount Airy
 Sykes, Rufus Preston, S ⁶⁰ Asheboro
 *Symington, John, GP ⁵¹ Carthage
 Tally, Bailey Thomas, S ⁶⁸ Albemarle
 *Tankersley, James William
 (Hon.), S ³² Greensboro
 *Tannenbaum, Abraham Jack, I ³² Greensboro
 *Tanner, Kenneth S., Jr., S ⁶⁵ Rutherfordton
 *Tart, Baston Isaiah, Jr. ⁷⁵ Goldsboro
 Tate, Lawson, S ⁴ Banner Elk
 Tate, William Cummings (Hon.), S ⁴ Banner Elk
 Tatum, Roy Carroll ³⁹ Taylorsville
 Taubenhause, L. J., GP ⁵² Shallotte
 *Taylor, John Cotten, Ob ⁵ Washington
 Taylor, Andrew Duval, A ⁴⁹ Charlotte
 Taylor, Benjamin Cicero, GP ²⁷ Mt. Holly
 Taylor, Erasmus Hervey Evans, P ⁹ Morganton
 Taylor, Frank Victor, OALR ¹⁵ Murphy
 Taylor, Frederick Raymond (Hon.),
 I ³² High Point
 Taylor, George Winston
 (Hon.), S ³⁹ Mooresville
 Taylor, James Nathaniel (Hon.), I ³² Greensboro
 Taylor, John Eldridge, GP ⁹ Morganton
 Taylor, Rives Williams, GP ³⁰ Oxford
 Taylor, Shahane Richardson,
 OALR ³² Greensboro
 *Taylor, Thomas Jefferson ³³ Roanoke Rapids
 Taylor, Vernon Williams, Jr. ⁶⁹ Elkin
 Taylor, Wesley Ewing, PN ³² Greensboro
 Taylor, William Ivey (Hon.), GP ⁵² Burgaw
 Taylor, William Ivey, Jr., GP ⁵² Burgaw
 Taylor, William Louis (Hon.), GP ³⁰ Oxford
 *Temple, Rufus Henry, I ⁴³ Kinston
 Templeton, Ralph ¹¹ Lenoir
 Tennent, Gaillard S. (Hon.), Oph ⁸ Asheville
 *Terry, Jarvis Russell (Hon.), Pd ²¹ Lexington
 Terry, Philip Roy, GP ⁸ Asheville
 *Terry, William Calvin (Hon.), GP ⁶¹ Hamlet
 Thaxton, Benjamin Adams (Hon.), GP ⁵⁷ Roxboro
 Thigpen, Harry Gordon, GP ³³ Scotland Neck
 Thomas, B. D., GP ⁴² Jonesboro
 *Thomas, Charles Darwin, T ⁸ Black Mountain
 Thomas, Julius Graham ³² Greensboro
 *Thomas, Walter Lee, ObG ²³ Durham
 Thomas, Wilbur Clyde, Path ²⁵ Winston-Salem
 Thomas, William Nelson (Hon.), S ³⁰ Oxford
 *Thompson, Claude Durant (Hon.),
 GP ³² High Point
 Thompson, Clive Allen, GP ⁷⁶ Sparta
 Thompson, George Richard Cunliffe,
 GP ⁵² Wilmington
 *Thompson, Heyward Chevis, T ¹⁷ Shelby

- Thompson, Hugh Alexander (Hon.), Or ⁷³ Raleigh
 *Thompson, Joseph W. (Hon.), GP ³⁰ Creedmoor
 *Thompson, Lloyd J., P ²⁵ Winston-Salem
 Thompson, Sanford Webb, Jr., GP ¹² Morehead City
 *Thompson, Silas Raymond (Hon.), U ⁴⁹ Charlotte
 *Thompson, William Nelson, Hosp. Res. ⁷³ Raleigh
 Thompson, Winfield L., S&G ⁷⁵ Goldsboro
 *Thornhill, Edwin Hale ⁷³ Raleigh
 Thorp, Adam Tredwell, ObG ²⁴ Rocky Mount
 Thurston, Asa (Hon.), GP ³⁹ Taylorsville
 *Thurston, Thomas G., R ⁶⁴ Salisbury
 *Tice, Walter Thomas, I ³² High Point
 *Tillery, Jack Gregory, GP ⁷⁷ Wilson
 Tilt, LeRoy W., Jr., GP ¹⁷ Lawndale
 Todd, Lester Claire, CP ⁴⁹ Charlotte
 Townsend, Maurice Lyndon (Hon.), ⁴⁹ Society Hill, S. C.
 Townsend, Robert Glenn, GP ⁶² St. Pauls
 *Trent, Josiah Charles, S ²³ Durham
 Trachtenberg, William, GP ⁷⁵ Goldsboro
 Triplett, William Romulus, GP ⁷⁶ Purlear
 Trotter, Fred Oscar, S ³⁶ Hendersonville
 Troutman, Baxter Suttles, GP ¹¹ Lenoir
 *Troxler, Eulyss Robert, Or ³² Greensboro
 Troxler, Raymond Moody (Hon.), GP ¹ Burlington
 *Tucker, Earl Van, GP ⁵⁸ Grifton
 *Tuggle, Allan Davis, R ⁴⁹ Charlotte
 Turlington, William Troy, Jr., GP ⁵⁴ Jacksonville
 Turner, Henry Gray, S ⁷³ Raleigh
 *Turner, Larry, OALR ²³ Durham
 Turner, Violet H., ObG ²³ Durham
 Turrentine, Kilby Pairo, I ⁴³ Kinston
 Tuttle, Andrew Frier (Hon.), GP ⁶³ Spray
 *Tuttle, Marler Slate, Pd ¹⁰ Kannapolis
 *Tuttle, Reuben Gray (Hon.), GP ²⁵ Winston-Salem
 Tydeman, Frederick William Louis (Hon.), CP ⁴⁹ San Francisco, California
 Tyler, Earl Runyon, D ²³ Durham
 *Tyndall, Robert Glenn, S ⁴³ Kinston
 Tyner, Carl Vann, S ⁶³ Leaksville
 Tyson, John Joyner ⁵⁸ Des Moines, Iowa
 *Tyson, Thomas David (Hon.), Pr ¹ Mebane
 *Tyson, Thomas David, Jr., Pd ³² High Point
 *Tyson, Woodrow Wilson, I ³² High Point
 Ulloth, Gustave, GP ³⁶ Hendersonville
 *Umphlet, Thomas Leonard, I ⁷³ Raleigh
 Upchurch, Robert T. (Hon.), ⁷² Henderson
 *Upchurch, Thaddeus Gilbert, GP ⁴¹ Smithfield
 Valk, Arthur DeTalma (Hon.), S ²⁵ Winston-Salem
 Valone, J. A., S ²¹ Lexington
 Van Gorder, Charles O., GP ¹⁵ Andrews
 Vance, S. W., GP ⁴⁶ Mars Hill
 *Vanore, Andrew A., GP ⁵¹ Robbins
 Vaughan, Roland Harris, GP ¹⁶ Edenton
 Vaughan, Edwin Warner, A & I ³² Greensboro
 *Vann, Herbert Moffett, Anat ²⁵ Winston-Salem
 Vann, Junius Richardson, GP ²⁴ Spring Hope
 *Vaughan, Walter Weddle, R ²³ Durham
 *Venning, William L., Pd ⁴⁹ Charlotte
 Verdery, William Carey, Pd ²⁰ Fayetteville
 Verner, Carl Hugh, Pd ⁶⁵ Forest City
 *Vernon, James Taylor, P ⁹ Morganton
 Vernon, James William (Hon.), P ⁹ Morganton
 Vestal, Willis Jasper (Hon.), P ²¹ Lexington
 Wadsworth, George H., GP ⁵⁶ Elizabeth City
 Wadsworth, Harvey Bryan, GP ¹⁹ New Bern
 Walden, Kennon C., S ⁵² Wilmington
 Walker, Elmer Pixley, GP ⁵² Wilmington
 Walker, John Barrett (Hon.), GP ¹ Burlington
 Walker, John Barrett, Jr., GP ¹ Burlington
 Walker, Lillie C., P ⁸ Asheville
 Walker, Louis Kyle, GP ³⁷ Ahoskie
 *Walker, Robert Jeffreys, Jr., GP ³¹ Snow Hill
 Wall, G. Ritchie, GP ⁶⁸ Albemarle
 *Wall, Roger Irving, OALR ⁷³ Raleigh
 Wall, Roscoe LeGrand (Hon.), Anes ²⁵ Winston-Salem
 Wall, William Stanley, Ob ²⁴ Rocky Mount
 Waller, L. C., GP ⁸ Asheville
 *Wallin, Loren, PH ² Wadesboro
 †Walters, Charles Manley (Hon.), GP ¹ Burlington
 *Walton, Cyrus Leslie, Ob ⁹ Glen Alpine
 Walton, George Britain, GP ¹⁸ Chadbourn
 Wannamaker, Edward Jones, Jr., I ⁴⁹ Charlotte
 *Ward, Ernest, PH ³⁹ Statesville
 *Ward, Frank P., I ⁶² Lumberton
 Ward, Ivie Alphonso (Hon.), OALR ¹⁶ Hertford
 Ward, Jesse Elliott (Hon.), GP ⁴⁷ Robersonville
 *Ward, John LaBruce, Pd ⁸ Asheville
 Ward, Vernon Albert (Hon.), I ⁴⁷ Robersonville
 Ward, Wallace Clyde, GP ⁷³ Raleigh
 Ward, Walter Elliott, I ⁴⁷ Robersonville
 Wardlaw, James L., Jr., GP ⁶⁸ Biscoe
 Warfield, Mary Cabell, Pd ³ Blowing Rock
 *Warren, Robert Franklin (Hon.), GP ¹ Prospect Hill
 *Warrick, Luby Albert, GP ⁷⁵ Goldsboro
 *Warshauer, Samuel E., I ⁵² Wilmington
 Warwick, Hight Claudius, Anes ³² Greensboro
 Washburn, Benjamin Earl, PH ⁶⁵ Rutherfordton
 Washburn, Chivous Yulan, GP ¹⁷ Mooresboro
 *Washburn, W. Wyman, GP ¹⁷ Boiling Springs
 *Watkins, Carlton Gunter, Pd ⁴⁹ Charlotte
 †Watkins, George Thomas, Jr. (Hon.), GP ²³ Durham
 Watkins, Charles, P ²³ Durham
 Watkins, John Armstrong, ObG ⁸ Asheville
 Watkins, William Merritt, GP ²³ Durham
 *Watson, George A., Pd ²³ Durham
 Watson, Hugh Alfred, GP ³² Greensboro
 Watson, Samuel Parks, ALR ¹⁹ New Bern
 Watters, Vernon Gregg, Jr., S ⁴⁹ Charlotte
 Way, John E., S ¹² Beaufort
 *Way, Samuel Eason, S ²⁴ Rocky Mount
 Weathers, Bahnson, S ³³ Roanoke Rapids
 *Weathers, Bailey Graham, GP ²⁷ Stanley
 *Weathers, Rupert Ryan, GP ⁷³ Knightdale
 Weaver, William Jackson (Hon.), Pr ⁸ Asheville
 *Webb, Alexander, Jr., S ⁷³ Raleigh
 Webb, William P. (Hon.), GP ⁶¹ Rockingham
 Webster, Ben, Oph ⁷⁰ Brevard
 Wedde, T. S., Path ²⁵ Winston-Salem
 *Weeks, John F., GP ⁵⁶ Elizabeth City
 Weeks, Kenneth Durham, I ²⁴ Rocky Mount
 Weinstein, Rayford Lee, GP ⁶² Fairmont
 Weisers, John Christopher ⁴⁰ Bryson City
 *Weizenblatt, Sprinza, Oph ⁸ Asheville
 Welfare, Charles R., I ²⁵ Winston-Salem
 Wellborn, William R., GP ³⁹ Elkin
 Wells, Warner L., S ⁷³ Raleigh
 *Welton, David Goe, D ⁴⁹ Charlotte
 Welton, Felix Burwell, S ¹⁸ Whiteville
 Wessell, John Charles (Hon.), I ⁵² Wilmington
 West, Bryan Clinton, Pd ⁴³ Kinston
 West, Clifton Forrest, I ⁴³ Kinston
 West, Louis Nelson (Hon.), OALR ⁷³ Raleigh
 Westmoreland, Joseph Robert, GP ³⁵ Canton
 Whaley, James Davant, U ¹³ Hickory
 Wharton, Charles Watson, GP ⁴¹ Smithfield
 Wheeler, James Hartwick, GP ⁷² Henderson
 Wheless, James Block, GP ²⁶ Louisburg

* Present at 1918 meeting.

† Deceased.

Wheless, Thomas O., GP 26	Louisburg	Wilson, Clarence L. (Hon.), GP 11	Lenoir
Whichard, Murray Parmer (Hon.), PH 16	Edenton	Wilson, Frank E., Deputy Med. Director, Red Cross 10	Washington, D. C.
Whicker, Guy Lorraine, GP 10	Kannapolis	Wilson, George D., I 8	Asheville
Whicker, Max Evans, GP 64	China Grove	Wilson, James Stephenson, S 23	Durham
Whilden, James Griffith, R 23	Durham	Wilson, Newton Graves (Hon.), GP 63	Madison
Whisnant, Albert Miller (Hon.), OALR 49	Charlotte	Wilson, Roebry Bryant, Anes 8	Asheville
Whitaker, D. N., GP 73	Raleigh	Wilson, Samuel Allen 44	Lincolnton
*Whitaker, James Allen, PH 24	Rocky Mount	Wilson, Stephen Glenn 34	Angier
*Whitaker, Paul Frederick, I 43	Kinston	*Wilson, Thomas Barnette, Path 73	Raleigh
†Whitaker, Richard Bidgood (Hon.), GP 18	Whiteville	*Wilson, William Gilliam, GP 41	Smithfield
White, Carleton B., GP 8	Montreat	*Wilson, William J., Or 52	Wilmington
White, Clarence Hunt, Oph 72	Henderson	*Wilson, W. Howard, I 73	Raleigh
*White, Estus, GP 10	Kannapolis	*Winkler, Harry, Or 49	Charlotte
White, Francis Willard Moody, GP 33	Halifax	Winstead, Ellis Grey, GP 5	Belhaven
White, Robert Alexander, Ob 8	Asheville	*Winstead, John Lindsay, S 58	Greenville
White, Thomas Preston, I 49	Charlotte	Winton, W. C., T 77	Wilson
White, William Henry Clay, S 56	Elizabeth City	Winston, Patrick Henry, GP 30	Clarksville, Va.
*Whitehead, Seba L., D 8	Asheville	Wisely, Martin Robert, GP 16	Edenton
Whitfield, Bryan Watkins, GP 15	Murphy	Wiseman, Perry Haynes, GP 65	Avondale
Whitley, Ayer, GP 49	Matthews	*Withers, William A., I 73	Raleigh
*Whitley, Robert Macon, Jr., I 24	Rocky Mount	*Wolfe, Harold E., D&R 75	Goldsboro
*Whitt, Walter Fulton, Jr., GP 71	Monroe	*Wolfe, Hugh Claibourne, OALR 32	Greensboro
*Whittington, Claude Thomas, S 32	Greensboro	Wolfe, Nathan Carl, GP 52	Burgaw
Whittington, James Benbow (Hon.), Hosp. Ad. 25	Winston-Salem	Wolfe, Ralph Verlon, GP 25	Winston-Salem
Widenhouse, Martin Aubrey, GP 10	Concord	*Woltz, John Henry Early, ObG 49	Charlotte
Wiggins, John Carroll, Jr., I 25	Winston-Salem	Woltz, John Louis (Hon.) 69	Mount Airy
*Wildner, Raboteau Terrell, GP 18	Fair Bluff	Womble, Edwin C., GP 67	Wagram
*Wilkerson, Annie Louise, ObG 73	Raleigh	Womble, William Hugh, Jr., 32	Greensboro
Wilkerson, Jesse Bert, GP 70	Brevard	Wood, Frank, S 16	Edenton
Wilkes, Grover W. 40	Sylva	*Wood, George Thomas, S 32	High Point
Wilkes, Marcus Branch, GP 67	Laurinburg	Wood, Hagan Emmett, T 8	Black Mountain
*Wilkins, Java Cleveland, GP 1	Haw River	Wood, Martha 16	Edenton
*Wilkins, Robert Bruce (Hon.), OALR 23	Durham	Wood, William L., GP 69	Boonville
Wilkins, Samuel A. (Hon.), GP 27	Dallas	*Wood, William Reed 32	Greensboro
*Wilkinson, C. T. 73	Wake Forest	Woodard, Albert G. (Hon.), Oph 75	Goldsboro
Wilkinson, James S., D 73	Wake Forest	Woodard, Barney Lelon, GP 41	Kenly
*Wilkinson, Louis Lee, GP 32	High Point	Woodard, Charles Augustus (Hon.), S 77	Wilson
Wilkinson, Robert Watson, Jr., GP 73	Wake Forest	Woodburn, C. H., PH 33	Littleton
*Willcox, Jesse Womble (Hon.), PH 51	Southern Pines	Woodhall, Maurice Barnes, NS 23	Durham
Williams, Albert Franklin (Hon.), GP 77	Wilson	*Woodruff, Fred Gwyn, GP 32	High Point
*Williams, Charles Frederick, Pd 73	Raleigh	Woodruff, William E., S 60	Asheboro
Williams, Edward Jerome, GP 71	Monroe	Woods, James Baker, Jr., GP 49	Davidson
*Williams, Jabez H., PH 8	Oteen	Woodson, Charles Whitehead (Hon.), GP 64	Salisbury
Williams, James Marcus, GP 22	Warsaw	Woody, John Wycliffe Austin, GP 59	Tryon
Williams, John Drewey (Hon.), GP 32	Guilford Station	Wooten, Cecil C., GP 43	Kinston
Williams, John Dudley, Jr., GP 32	Greensboro	Wooten, E. L., GP 67	Laurinburg
Williams, John W., PH 47	Williamston	Wooten, Floyd Pugh, S 43	Kinston
Williams, Lester L., GP 50	Spruce Pine	Wooten, Jane Herring 73	Raleigh
Williams, Leonidas Polk, GP 16	Edenton	Worley, James Harr 8	Asheville
*Williams, Lynwood Earl, I 43	Kinston	*Wrenn, Creighton, GP 39	Mooresville
*Williams, McChord, S 49	Charlotte	Wrenn, Grover Cleveland, GP 14	Siler City
*Williams, Robert, R 73	Raleigh	Wrenn, S. M., S&G 62	Lumberton
Williams, Roderick Thomas, GP 58	Farmville	Wright, C. N., GP 56	Jarvisburg
Williams, Samuel Hodges, Jr., S 5	Washington	Wright, Frederick Starr 8	Asheville
Williams, Thomas Richard, Jr., GP 13	Hickory	Wright, J. T., GP 5	Belhaven
Williams, Tom Alfred, PN 8	Asheville	*Wright, James Rhodes, OALR 73	Raleigh
Williamson, Rossie Marshall, GP 18	Tabor City	Wright, John Bryan (Hon.), OALR 73	Raleigh
*Williford, John Kenneth, GP 34	Lillington	*Wright, John Everett, GP 24	Macclesfield
Willis, Arthur Ponder (Hon.), GP 8	Candler	*Wright, John Joseph, PH 23	Chapel Hill
Willis, Byrd Charles (Hon.), S 24	Orange, Va.	Wright, Ken, S 24	Rocky Mount
*Willis, Candler Arthur, GP&S 8	Enka	Wright, Orpheus Evans, GP 25	Winston-Salem
Willis, Harry Clay OALR 77	Wilson	Wright, R. B., Jr. 64	Salisbury
*Willis, Henry Stuart, T 38	McCain	*Wright, Thomas Hasel, Jr., P 49	Charlotte
Willis, William Henry, Jr., GP 19	New Bern	Wyatt, Arthur Thomas, 34	Raleigh
*Wilsey, John D., Oph 25	Winston-Salem	Wyatt, Hubert Lee, GP 64	China Grove
		Wyatt, Wortham (Hon.), D 25	Winston-Salem
		*Wyche, Joseph Thomas, GP 18	Whiteville

* Present at 1948 meeting.

† Deceased.

*Wylie, William deKalb, I ²⁵	Winston-Salem	Young, John Clingman, U ⁸	Asheville
Yarborough, Frank Ray, ALR ⁷³	Cary	Young, Joseph A., GP ¹³	Newton
Yates, Percy Fenton, GP ⁴¹	Clayton	*Young, Robert Foster, PH ³³	Halifax
*Yoder, Paul Allison, T ²⁵	Winston-Salem	Youngblood, Vernon, GP ¹⁰	Concord
York, Alexander Arthur (Hon.),		Yow, Daniel Eugene, I ¹⁰	Concord
GP ³²	High Point	Yow, Ira A. (Hon.), GP ¹⁰	Concord
*Young, David A., P ⁷³	Raleigh	Zealy, Albert Hazel, Jr., GP ⁷⁵	Goldsboro

* Present at 1948 meeting.

Key to Specialties

A—Allergy
 Anes—Anesthesiology
 ALR—Otology, Laryngology,
 Rhinology
 Bact—Bacteriology
 C—Cardiovascular Disease
 CP—Clinical Pathology
 D—Dermatology
 ED—Medical Education
 G—Gynecology
 GE—Gastroenterology
 GP—General Practice
 Hosp Ad—Hospital
 Administration

Hosp Res—Hospital Resident
 I—Internal Medicine
 Ind—Industrial Practice
 Ins—Insurance
 N—Neurology
 NS—Neurological Surgery
 OALR—Ophthalmology, Otology,
 Laryngology, Rhinology
 Ob—Obstetrics
 ObG—Obstetrics, Gynecology
 Oph—Ophthalmology
 Or—Orthopedic Surgery
 Otol—Otology
 P—Psychiatry

PN—Psychiatry, Neurology
 Path—Pathology
 Pd—Pediatrics
 PH—Public Health
 Phar—Pharmacology
 Phy—Physiology
 Pr—Proctology
 R—Roentgenology, Radiology
 S—Surgery
 T—Tuberculosis
 U—Urology

ROSTER OF FELLOWS FOR 1948

By Counties

NOTE: We have endeavored to secure correct information in regard to every physician whose name is listed. Anyone finding an error should report it immediately to the Secretary of the State Society.

ALAMANCE-CASWELL COUNTIES SOCIETY¹

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Lawson, George William, GP, Graham; Long Island Coll. of Med., 1935.....	1935	1938
Secretary: McLamb, George Thomas, GP, Mebane; Univ. of Tenn., 1938.....	1941	1942
Bell, Felix Ortan, GP, Burlington; Atlanta Med. Coll., 1918.....	1921	1928
Braddy, Wade Hampton (Hon.), GP, Burlington; Univ. of N. C., 1909.....	1909	1913
Brooks, Ralph Elbert, U, Burlington; Jefferson, 1920.....	1920	1922
Carlyle, John Bethune, Ind, Burlington; Jefferson, 1926.....	1926	1928
Carrington, George Lunsford, S, Burlington; Johns Hopkins, 1920.....	1920	1925
Cook, William Eugene, T, Mebane; Washington Univ., 1930.....	1930	1934
Crisman, C. S., GP, Graham; Temple, 1942.....	1942	1947
Dickson, Malcolm Shields, GP, Burlington; Med. Coll. of S. C., 1927.....	1927	1929
Ellington, Amzi Jefferson (Hon.), OALR, Burlington; Columbia, 1915.....	1915	1917
Goley, Willard Coe, GP, Graham; Univ. of Pa., 1924.....	1924	1926
Greene, Phares Yates, GP, Burlington; Northwestern, 1932.....	1932	1934
Gwynn, Houston LaFayette, GP, Yanceyville; Med. Coll. of Va., 1923.....	1923	1925
Harden, Graham, GP, Burlington; Univ. of Pa., 1919.....	1920	1922
Heffner, B. L., I, Burlington; Northwestern, 1936.....	1938	1947
Huntington, S. H., GP, Burlington; Albany Med. Coll., 1946.....	1947	1948
Johnson, Joseph Lewis, GP, Graham; Jefferson, 1926.....	1926	1930
Kernodle, G. W., Pd, Burlington; Duke, 1944.....	1945	1948
Kernodle, Harold B., Or, Burlington; Duke, 1939.....	1941	1946
Kraycirk, E. T., GP, Burlington; Duke, 1945.....	1945	1948
Lupton, Emmett Stevenson, Pd, Graham; N. Y. Univ. Sch. of Med., 1938.....	1938	1940
McDade, Brodie Banks, Ob, Burlington; Univ. of Md., 1918.....	1918	1920
McPherson, Charles Wade (Hon.), OALR, Burlington; Univ. of Md., 1910.....	1910	1912
Moore, Henry Blanchard, G, Burlington; Jefferson, 1920.....	1920	1923
Robinson, Donald Edward, Pd, Burlington; Harvard, 1927.....	1929	1930
Scott, Samuel Floyd, GP, Burlington; Univ. of Pa., 1918.....	1918	1920
Simmons, Alexander Wingate, GP, Burlington; Jefferson, 1939.....	1939	1940
Simpson, Henry Hardy, GP, Elon; Univ. of Md., 1925.....	1925	1926
Smith, Fitzhugh Lee, GP, Burlington; Univ. of Pittsburgh, 1927.....	1927	1928
Spoon, Samuel Clarence, ObG, Burlington; Univ. of Md., 1918.....	1918	1920
Stevens, Hamilton Wright, Jr., PH, Wilson; Jefferson, 1938.....	1938	1940
Troxler, Raymond Moody (Hon.), GP, Burlington; Univ. of Md., 1914.....	1914	1915
Tyson, Thomas David (Hon.), Pr, Mebane; Univ. Coll. of Med., Richmond, 1899.....	1899	1904
Walker, John Barrett (Hon.), GP, Burlington; Med. Coll. of Va., 1914.....	1914	1916
Walker, John Barrett, Jr., GP, Burlington; Med. Coll. of Va., 1944.....	1947	1948
†Walters, Charles Manley (Hon.), GP, Burlington; Univ. of Md. and Coll. of P. & S., Baltimore, 1908.....	1908	1909
Warren, Robert Franklin (Hon.), GP, Prospect Hill; Atlanta School of Med., 1911.....	1911	1912
Wilkins, Java Cleveland, GP, Haw River; Univ. of Md., 1911.....	1911	1920

ALEXANDER—SEE IREDELL-ALEXANDER

ALLEGHANY—SEE WILKES-ALLEGHANY

ANSON COUNTY SOCIETY²

President: Carter, Warren Dallas, PH, Wadesboro; Med. Coll. of S. C., 1934.....	1935	1936
Secretary: McKinnon, W. J., Wadesboro; Univ. of Md., 1940.....	1946	1946
Allen, Charles Insley, S, Wadesboro; Columbia, 1913.....	1913	1922
Bennett, Joseph Hammond (Hon.), GP, Wadesboro; Univ. of Md., 1894.....	1894	1904
Covington, James Madison, Jr., GP, Wadesboro; Duke, 1938.....	1940	1942
Davis, James Matheson, Pd, Wadesboro; Columbia, 1913.....	1913	1920
Kress, Esta Joyce Levy, Pd, Wadesboro; Med. Coll. of Va., 1935.....	1938	1939
Kress, Jacob Himi, S, Wadesboro; Med. Coll. of Va., 1936.....	1938	1939
Sorrell, Furman Yates, GP, Wadesboro; Jefferson, 1930.....	1930	1933
Wallin, Loren, PH, Wadesboro; Univ. of Tenn., 1909.....	1909	1938

ASHE-WATAUGA COUNTIES SOCIETY³

President: Perry, Henry B., GP, Boone; N. C. Med. Coll., 1905.....	1905	1922
Secretary: King, Robert Rogers, Jr., PH, Boone; Bowman Gray Sch. of Med., 1944.....	1944	1947
Ballou, James Larkin, Oph, Grassy Creek; Jefferson, 1901.....	1901	1901

† Deceased.

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Garvey, Robert Robey, U, Blowing Rock; N. C. Med. Coll., 1915.....	1915	1919
Hagaman, John Bartlett (Hon.), GP, Boone; Univ. of Tenn., 1915.....	1915	1917
Hagaman, Len Doughton, PH, Boone; Univ. of Pa., 1936.....	1936	1938
Harmon, Raymond Harris, Boone; Med. Coll. of Va., 1936.....	1936	1936
Jones, Arthur Lee, GP, Lansing; Univ. Coll. of Med., Richmond, 1901.....	1901	1941
Jones, Clyde T., GP, West Jefferson; Univ. of Tenn., 1940.....	1945	1946
Jones, Dean Cicero, GP, Jefferson; Univ. of Pa., 1927.....	1930	1930
Long, Lester Lee, GP, West Jefferson; Lincoln Memorial Univ., 1916.....	1916	1934
Perry, Henry Baker, Jr., GP, Boone; Univ. of Md., 1943.....	1943	1943
Ray, Ritz Clyde, GP, West Jefferson; Med. Coll. of Va., 1916.....	1916	1917
Robinson, W. J., GP, Creston; Med. Coll. of Kansas City, 1904.....	1907	1917
Warfield, Mary Cabell, Pd, Blowing Rock; Woman's Med. Coll. of Pa., 1922.....	1928	1935

AVERY COUNTY SOCIETY⁴

President: Tate, Lawson, S, Banner Elk; Univ. of Tenn., 1939.....	1941	1944
Secretary: Fink, Emma Sloop, GP, Crossnore; Vanderbilt, 1936.....	1938	1938
Bailey, Hilda H., GP, Banner Elk; Univ. of Pa., 1945.....	1946	1947
Burleson, William Brown (Hon.), GP, Plumtree; Univ. of Md., 1915.....	1915	1916
Prusa, Victor H., GP, Banner Elk; Univ. of Iowa, 1936.....	1939	1946
Sloop, Eustace H. (Hon.), GP, Crossnore; N. C. Med. Coll., 1905; Jefferson, 1908.....	1905	1907
Tate, William Cummings (Hon.), S, Banner Elk; Tenn. Med. Coll., 1908.....	1909	1912

BEAUFORT COUNTY SOCIETY⁵

President: Piver, William C., GP, Washington; Hahneemann Med. Coll., 1941.....	1946	1946
Secretary: Ford, David Emerson, PH, Washington; Univ. of Mich., 1908.....	1924	1925
Bonner, John Bryan, GP, Aurora; Univ. of Md., 1918.....	1918	1920
Brown, E. M. (Hon.), GP, Washington; Bellevue Hospital, 1896.....	1896	1901
Bynum, C. C., GP, Belhaven; Jefferson, 1943.....	1943	1946
Hackler, Robert Hardin, Jr., R, Washington; Jefferson, 1926.....	1926	1928
Hawes, C. M., OALR, Washington; Univ. of Va., 1900.....	1945	1948
Himmelwright, G. G., S, Washington; Univ. of Va., 1937.....	1940	1947
Larkin, Ernest Waddill, OALR, Washington; Med. Coll. of Va., 1917.....	1920	1922
Nicholson, Plummer A. (Hon.), Ob, Washington; Coll. of P. & S., Baltimore, 1889.....	1889	1890
Peters, August Richard, Jr., Pd, Washington; Univ. of Ga., 1935.....	1938	1939
Ramsay, James Graham, S, Washington; Univ. of Pa., 1922.....	1924	1924
Rodman, Clark, GP, Washington; Jefferson, 1943.....	1943	1947
Salle, George F., GP, Washington; Med. Coll. of Va., 1933.....	1933	1946
Swindell, Lewis Holmes, GP&S, Washington; Univ. of Pa., 1916.....	1916	1919
Tayloe, John Cotten, Ob, Washington; Univ. of Pa., 1922.....	1924	1925
Williams, Samuel Hodges, Jr., S, Washington; Univ. of Pa., 1942.....	1943	1944
Winstead, Ellis Grey, GP, Belhaven; Med. Coll. of Va., 1929.....	1929	1930
Wright, J. T., GP, Belhaven; Jefferson, 1943.....	1943	1947

BERTIE COUNTY SOCIETY⁶

President: Norfleet, Edgar Powell, Pd, Roxobel; Med. Coll. of Va., 1914.....	1914	1920
Secretary: Garriss, Frank Henry, PH, Lewiston; Jefferson, 1912.....	1912	1918
Castellow, Cola, S, Windsor; Univ. of Pa., 1917.....	1917	1926
Credle, Carroll Spencer, GP, Colerain; Med. Coll. of Va., 1932.....	1932	1941
Lewis, Sigma Van, Windsor; Med. Coll. of Va., 1916.....	1916	1923
Saunders, Sheldon Asa, GP, Aulander; Jefferson, 1914.....	1914	1918
Smith, Joseph Elmer, GP, Windsor; Med. Coll. of Va., 1921.....	1921	1922

BLADEN COUNTY SOCIETY⁷

President: Singletary, George Currie (Hon.), GP, Clarkton; Univ. of Pa., 1917.....	1917	1918
Secretary: Bridger, Dewey Herbert, GP, Bladenboro; Jefferson, 1922.....	1922	1925
Clark, DeWitt Duncan, GP, Clarkton; Med. Coll. of Va., 1917.....	1917	1920
Cromartie, Robert S. (Hon.), PH, Elizabethtown; N. C. Med. Coll., 1900.....	1900	1906
Glenn, Channing, GP, Elizabethtown; Med. Coll. of Va., 1933.....	1936	1939
Hutchinson, Sankey Smith (Hon.), S, Bladenboro; N. C. Med. Coll., 1911.....	1911	1912

BRUNSWICK COUNTY SOCIETY

BUNCOMBE COUNTY SOCIETY⁸

President: Cherry, James Henderson, Or, Asheville; Duke, 1933.....	1939	1941
Secretary: Sluder, Fletcher S., ObG, Asheville; Rush Med. Coll., 1938.....	1938	1946
Ambler, Arthur Chase, Anes, Asheville; Jefferson, 1920.....	1921	1922
Anderson, John Bascom, GP, Asheville; Univ. of Md., 1935.....	1935	1938
Anderson, Norman LaRue, Black Mountain; Duke, 1939.....	1945	1945
Armentrout, Charles H., I, Asheville; Med. Coll. of Va., 1931.....	1940	1941
Atkins, Stanley Sisco, Or, Asheville; Cornell, 1937.....	1943	1943
Bailey, Harmon J., ObG, Asheville; Washington Univ., 1934.....	1946	1946

ROSTER OF FELLOWS

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<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Barber, John F., Asheville; Univ. of Pa., 1940.....	1947	1948
Belcher, Cecil Cullen, U, Asheville; Tulane, 1930.....	1939	1940
Bell, L. Nelson, S, Asheville; Med. Coll. of Va., 1916.....	1941	1942
Bennett, Basil, P, Asheville; Univ. of Tenn., 1931.....	1946	1946
Bittinger, Samuel Moffett, T, Oteen; George Washington Univ., 1918.....	1924	1924
Blumberg, Alfred, Path, Atlanta, Ga.; Univ. of Colorado, 1923.....	1928	1929
Bradley, John D., P, Asheville; Univ. of Ga., 1936.....	1945	1947
Brewton, William Allan, Ind, Enka; Univ. of Pa., 1927.....	1927	1929
Briggs, Henry Harrison, Oph, Asheville; Yale, 1931.....	1933	1934
Brookshire, Harley Gaskill (Hon.), GP, Asheville; N. C. Med. Coll., 1905.....	1905	1906
Brown, Kermit English, ObG, Asheville; Jefferson, 1927.....	1927	1930
Brownsberger, Ethel May, GP, Biltmore; Coll. of Med. Evangelists, 1927.....	1933	1934
Buckner, James Marion (Hon.), S, Swannanoa; Univ. of N. C., 1909.....	1909	1912
Burnett, Thomas J. M., GP, Black Mountain; Bowman Gray Sch. of Med., 1945.....	1947	1948
Burton, Claude Naylor, ObG, Asheville; Univ. of Cincinnati, 1936.....	1938	1938
Carr, Catherine C., GP, Biltmore; Johns Hopkins, 1919.....	1942	1942
Carr, Eugene Morrison, I, Asheville; Johns Hopkins, 1919.....	1926	1927
Chandler, Weldon P., GP, Weaverville; Univ. of Md., 1940.....	1940	1946
Chapman, Edwin James, ALR, Asheville; Northwestern, 1928.....	1939	1940
Clapp, Hubert Lee, GP, Swannanoa; Univ. of Ga., 1937.....	1938	1938
Clark, Harold Stevens, S, Asheville; Univ. of Pa., 1922.....	1922	1924
Clayton, Eugene C., GP, Asheville; Bowman Gray Sch. of Med., 1945.....	1945	1948
Cocke, Jere Ellis (Hon.), Asheville; Louisville Med. Coll., 1905.....	1905	1906
Codnere, John T., U, Asheville; Univ. of Toronto, 1938.....	1946	1946
Cooley, Samuel Studdiford, GP, Black Mountain; N. Y. Univ., 1934.....	1934	1938
Corcoran, Edwin E., I & D, Asheville; Univ. of S. C., 1937.....	1946	1946
Croom, Gabe Holmes, P, Asheville; N. C. Med. Coll., 1909.....	1909	1916
Crow, Samuel Leslie, I, Asheville; Emory, 1925.....	1926	1927
Crump, Cecil Lavon, OALR, Asheville; Baylor Univ., 1930.....	1935	1936
Crump, George Curtis, I, Asheville; Harvard, 1926.....	1933	1934
Daniels, Robert E., GP, Asheville; Univ. of Indiana, 1928.....	1945	1946
Donnelly, Grant Lester, GP, Oteen; Duke, 1933.....	1933	1935
†Eckel, O. F. (Hon.), Anes, Asheville; Med. Coll. of S. C., 1906.....	1907	1908
Edwards, Bertie Oscar (Hon.), I, Asheville; N. C. Med. Coll., 1905.....	1905	1909
Farmer, W. E., I, Asheville; Tulane, 1939.....	1947	1947
Farnsworth, David I., Oteen; Louisiana State Univ., 1941.....	1946	1947
Feldman, Leon Henry, I, Asheville; Univ. of Md., 1934.....	1938	1938
Freeman, William Talmage, Pd, Biltmore; Univ. of Ga., 1917.....	1927	1929
Gilbert, George G., U, Asheville; Johns Hopkins, 1938.....	1947	1947
Gillespie, Samuel Crawford, I, Asheville; Univ. of Cincinnati, 1931.....	1935	1936
Grantham, Wilmer Lloyd (Hon.), U, Asheville; N. C. Med. Coll., 1906.....	1906	1908
Greene, Joseph Berry (Hon.), OALR, Asheville; Univ. of Va., 1893.....	1910	1911
Greenwood, Adolphus Barte (Hon.), U, Asheville; Johns Hopkins, 1916.....	1916	1917
Griffin, Mark Alexander, P, Asheville; Jefferson, 1917.....	1917	1918
Griffin, William Ray (Hon.), PN, Asheville; Jefferson, 1910.....	1910	1917
Griffith, Franklin Webb (Hon.), S, Asheville; Johns Hopkins, 1906.....	1911	1912
Griffith, Lewie Muller (Hon.), OALR, Asheville; Johns Hopkins, 1915.....	1916	1918
Hartman, Bernhard Henry, P, Asheville; Yale, 1937.....	1941	1942
Henderson-Smiths, Irma Carlene, GP, Asheville; Tulane, 1933.....	1934	1935
Hensley, Charles Albert, OALR, Asheville; Jefferson, 1917.....	1917	1927
Herbert, William P. (Hon.), S, Asheville; Univ. of Va., 1907.....	1910	1911
Hollvdav, William Murray (Hon.), OALR, Asheville; Univ. of Md., 1908.....	1914	1915
Hubbard, Robert T., GP & Ob, Asheville; Temple, 1943.....	1943	1947
Huffnes, Thomas Ruffin, U, Asheville; Indiana Univ., 1919.....	1922	1924
Hughes, Samuel E., Jr., Richmond, Va.; Med. Coll. of Va., 1924.....	1947	1948
Huston, John Walter (Hon.), T, Asheville; Rush Med. Coll., 1904.....	1912	1913
Ivey, Robert Robbins, S, Asheville; Univ. of Ala., 1909.....	1921	1921
Jacobs, Paul, GP, Oteen; Univ. of Arkansas, 1934.....	1945	1946
Johnson, Walter Royle, I, Asheville; Univ. of Minn., 1924.....	1933	1934
Justice, William Shipp, S, Asheville; Harvard, 1926.....	1930	1931
Karansky, Stanley, GP, Enka; Duke, 1941.....	1946	1946
Keithan, John F., S, Asheville; Jefferson, 1934.....	1946	1946
King, Edward, Anes, Asheville; Harvard, 1917.....	1921	1922
Knoefel, Arthur Eugene, Jr., GP, Black Mountain; Louisiana State Univ., 1935.....	1935	1938
Kodack, Albert, GP&S, Asheville; Univ. of Toronto, 1940.....	1943	1946
Koontz, E. Ransom, Oteen; Univ. of Mich., 1932.....	1946	1947
Lee, C. Marshall, Jr., S, Asheville; Univ. of Va., 1935.....	1947	1947
Lord, Margery Juline, PH, Asheville; Univ. of Mich., 1916.....	1918	1919
Lott, William Clifton, U, Asheville; Univ. of Colorado, 1929.....	1930	1931
Lyda, Edgar W., GP, Asheville; Bowman Gray Sch. of Med., 1944.....	1944	1947
Lynch, James Madison (Hon.), S, Asheville; Univ. of Md., 1904.....	1912	1913
Macatee, George, Jr., ObG, Asheville; George Washington Univ., 1939.....	1947	1947

† Deceased.

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
MacRae, John Donald, R, Asheville; Univ. of Pa., 1927.....	1927	1930
Mahoney, J. W., ObG, West Asheville; Georgetown Univ., 1926.....	1946	1947
Matros, Nathaniel Hamilton, S, Asheville; Marquette Univ., 1930.....	1933	1934
Matthews, James H., T, Asheville; Vanderbilt, 1941.....	1941	1948
Matthews, Wallace Russell, Pd, Asheville; Univ. of Western Ontario, Canada.....	1944	1945
McCall, Alvin Clay (Hon.), OALR, Asheville; Univ. of Md., 1910.....	1910	1914
McCall, William Herbert, OALR, Asheville; Med. Coll. of Va., 1938.....	1941	1941
McGowan, Joseph Francis, OALR, Asheville; Univ. of Md., 1929.....	1937	1939
McGuffin, William Christian, GP, Asheville; Coll. of Med. Evangelists, 1933.....	1935	1937
McMahon, Francis J., Pr, Asheville; Univ. of St. Louis, 1925.....	1945	1946
Mears, George Augustus, S, Asheville; Syracuse Univ., 1924.....	1924	1927
Metcalf, Lawrence E., Pd, Asheville; Northwestern Univ., 1942.....	1942	1947
Millender, Charles White, S, Asheville; Tulane, 1919.....	1921	1924
Miller, Henry R., GP, Swannanoa; Univ. of Va., 1943.....	1947	1947
Moore, Edward E., Oph, Asheville; Harvard, 1942.....	1947	1948
Moore, Julian Alison, S, Asheville; Univ. of Pa., 1918.....	1918	1921
Morgan, Burnice Earl, GP, Asheville; Univ. of Tenn., 1917.....	1921	1922
Morgan, Grady Alexander, I, Asheville; Univ. of Tenn., 1917.....	1920	1926
Morgenstern, Philip, T, Black Mountain; George Washington Univ., 1937.....	1946	1947
Murphy, Gibbons Westbrook, R, Asheville; Emory, 1923.....	1923	1927
Nailling, Richard C., S, Asheville; Vanderbilt, 1940.....	1943	1944
Norburn, Charles Strickland, S, Asheville; Univ. of Va., 1917.....	1921	1924
Norburn, Russell Lee, S, Asheville; Vanderbilt, 1925.....	1925	1927
Orr, Charles Collins (Hon.), I, Asheville; Univ. of Md., 1904.....	1904	1905
Peacock, Roy Merritt, GP, Weaverville; Georgetown Univ., 1933.....	1938	1941
Peasley, Elmus Day, Path, Asheville; Univ. of Iowa, 1927.....	1939	1940
Peters, David B., S, Asheville; George Washington Univ., 1917.....	1920	1941
Pine, Irving, T, Oteen; N. Y. Med. Coll., 1932.....	1946	1946
Pipes, David McKowan, A, Asheville; Tulane, 1943.....	1939	1940
Powell, William F., OALR, Asheville; Duke, 1937.....	1946	1946
Prather, F. G., GP, Asheville; Univ. of Md., 1923.....	1946	1947
Printz, Don R., D, Asheville; Ohio State Univ., 1932.....	1947	1947
Proffitt, Ray V., T, Asheville; Univ. of Colorado, 1918.....	1945	1946
Quinn, David E., Dublin, Ga., George Washington Univ., 1930.....	1933	1934
Raiford, Theodore S., S, Asheville; Johns Hopkins, 1930.....	1947	1947
Raper, J. S., R, Asheville; Duke, 1938.....	1946	1946
Rathbun, Lewis S., ObG, Asheville; Harvard, 1939.....	1947	1948
Reeves, Rilev Jefferson, GP, Leicester; Vanderbilt, 1913.....	1913	1922
Richardson, Frank Howard, Pd, Black Mountain; Cornell, 1906.....	1919	1920
Ring, Louis J., GP, Black Mountain; Rush Med. Coll., 1933.....	1939	1948
Ringer, Paul Henry (Hon.), T, Asheville; Columbia, 1904.....	1906	1907
Roach, Leonard H., ObG, Asheville; Univ. of Cincinnati, 1942.....	1947	1948
Robertson, Logan T., Hosp. Ad., Asheville; Univ. of Cincinnati, 1942.....	1942	1947
Russell, William Marler, OALR, Asheville; Univ. of Cincinnati, 1928.....	1931	1932
Saunders, John Turner, Or, Asheville; Columbia, 1926.....	1934	1935
Schaffle, Karl, I, Asheville; Univ. of Pa., 1907.....	1926	1927
Schoenheit, Edward William, I, Asheville; Jefferson, 1920.....	1920	1921
Seyern, Henry D., Or, Asheville; Johns Hopkins, 1940.....	1946	1947
Sevier, Joseph Thomas (Hon.), GP, Asheville; Jefferson, 1895.....	1895	1899
Shuford, Mary Frances, Path, Asheville; Rush Med. Coll., 1934.....	1934	1935
Shuler, Edward L., Asheville; Med. Coll. of S. C., 1940.....	1945	1946
Sluder, Harold M., GP, Leicester; Bowman Gray Sch. of Med., 1945.....	1945	1948
Smart, Gardner F., OALR, Asheville; Duke, 1940.....	1946	1947
Smith, Bernard Reid (Hon.), I, Asheville; Jefferson, 1911.....	1913	1914
Sprinkle, Charles Nichols, GP, Weaverville; Jefferson, 1910.....	1910	1922
Sprinkle, Lawrence T., GP, Weaverville; Jefferson, 1907.....	1926	1927
Stricker, Robert L., Anes&GP, Asheville; Univ. of Pa., 1941.....	1941	1946
Suitt, Robert Burke, NP, Durham; St. Louis Univ. Sch. of Med., 1932.....	1933	1938
Sullivan, Joseph Timothy, GP, Asheville; N. Y. Univ., 1933.....	1935	1937
Swann, Cecil Collins, ALR, Asheville; Tulane, 1926.....	1930	1931
Tennent, Gaillard S. (Hon.), Onh, Asheville; N. C. Med. Coll., 1894.....	1894	1898
Thomas, Charles Darwin, T, Black Mountain; Univ. of Indiana, 1926.....	1930	1930
Terry, Philip Roy, GP, Asheville; George Washington Univ., 1907.....	1912	1913
Walker, Lillie C., P, Asheville; Univ. of Chicago, 1942.....	1945	1946
Waller, L. C., GP, Asheville; Coll. of Med. Evangelists, 1943.....	1946	1947
Ward, John LeBruce, Pd, Asheville; Med. Coll. of S. C., 1905.....	1921	1922
Watkins, John Armstrong, ObG, Asheville; Tulane, 1910.....	1925	1926
Weaver, William Jackson (Hon.), Pr, Asheville; Jefferson, 1898.....	1897	1903
Weizenblatt, Sprinza, Oph, Asheville; Vienniese Univ., 1922.....	1929	1931
White, Carlton B., GP, Montreat; Western Reserve, 1944.....	1947	1948
White, Robert Alexander, Ob, Asheville; Univ. of Cincinnati, 1918.....	1920	1921
Whitehead, Seba L., D, Asheville; Jefferson, 1921.....	1921	1929
Williams, Jabez H., PH, Oteen; Jefferson, 1920.....	1920	1922
Williams, Tom Alfred, PN, Asheville; Univ. of Edinburgh, 1896.....	1943	1943

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<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Willis, Arthur Ponder (Hon.), GP, Candler; Univ. of N. C., 1904.....	1904	1906
Willis, Candler Arthur, GP&S, Enka; Duke, 1936.....	1938	1938
Wilson, George D., I, Asheville; Temple, 1937.....	1939	1946
Wilson, Roebry Bryant, Anes, Asheville; Univ. of Louisville, 1931.....	1931	1933
Wood, Hagan Emmett, T, Black Mountain; Emory, 1922.....	1938	1939
Worley, James Harr, Asheville; Univ. of Tenn., 1931.....	1934	1935
Wright, Frederick Starr, Asheville; P. & S., New York, 1906.....	1945	1945
Young, John Clingman, U, Asheville; Univ. of Tenn., 1926.....	1926	1929

BURKE COUNTY SOCIETY⁹

President: McKee, John Sasser, Jr., P, Morganton; Univ. of Pa., 1929.....	1929	1936
Secretary: Reece, John C., Path, Morganton; N. Y. Univ., 1938.....	1938	1946
Adams, R. K., PN, Morganton; Jefferson, 1912.....	1912	1947
Arney, William Charles, GP, Morganton; Univ. of Md., 1940.....	1942	1942
Beall, Louis Girardeau (Hon.), NP, Morganton; N. C. Med. Coll., 1906.....	1906	1906
Billings, Gilbert M., OALR, Morganton; Tulane, 1919.....	1919	1920
Boehm, Emil, P, Morganton; Johns Hopkins, 1910.....	1946	1946
Brown, Winfred Earl, P, Banner Elk; Tulane, 1939.....	1939	1944
Davis, James W., R, Morganton; Med. Coll. of Va., 1943.....	1948	1948
Ervin, John Witherspoon, GP, Morganton; Med. Coll. of Va., 1933.....	1935	1936
Goodwin-Barbour, Edith, GP, Morganton; Woman's Med. Coll. of Pa., 1932.....	1934	1934
Hairfield, B. D., S, Morganton; Vanderbilt, 1939.....	1939	1948
Hamer, Alfred Wilson, GP, Morganton; Med. Coll. of S. C., 1921.....	1938	1940
Helms, Jefferson Bivins, S, Morganton; Univ. of Pa., 1928.....	1928	1931
Hogshead, Ralph, Jr., GP, Morganton; Temple, 1943.....	1948	1948
Hudson, Miles, GP, Valdese; Bowman Gray Sch. of Med., 1944.....	1944	1947
Kibler, William Herbert (Hon.), ALR, Morganton; Univ. of Pa., 1914.....	1914	1918
Kirksey, James Jackson, Pd, Morganton; Univ. of Pa., 1921.....	1921	1923
Kirksey, William Albert, GP, Morganton; Washington Univ., 1944.....	1947	1947
Lang, A. M., GP, Morganton; Med. Coll. of Va., 1943.....	1947	1947
Lynn, Cy Kellie, GP, Valdese; Med. Coll. of Va., 1932.....	1933	1937
Murphy, Robert Jennings, Jr., Pd, McCain; Vanderbilt, 1940.....	1940	1942
Nichols, Thomas Rogers, I, Morganton; Univ. of Rochester, 1930.....	1943	1943
Oehlbeck, Luther William, R, Morganton; Univ. of Rochester, 1930.....	1939	1939
Palmer, Yates Shuford, S, Valdese; Med. Coll. of Va., 1931.....	1931	1933
Patton, William Hugh, Jr., GP, Morganton; Univ. of Pa., 1937.....	1937	1940
Phifer, Edward W., S, Morganton; Harvard, 1937.....	1937	1946
Ribet, James Ernest, Valdese; Univ. of Md., 1947.....	1947	1948
Riggs, M. M., GP, Drexel; Duke, 1943.....	1947	1947
Sisk, Crete Nixon, PH, Morganton; Univ. of Nashville, 1905.....	1922	1923
Stiff, A. Olin, GP, Valdese; Med. Coll. of S. C., 1944.....	1945	1945
Taylor, Erasmus Hervey Evans, P, Morganton; Tulane, 1924.....	1924	1925
Taylor, John Eldredge, GP, Morganton; Med. Coll. of Va., 1922.....	1929	1930
Vernon, James Taylor, P, Morganton; Washington Univ., 1943.....	1944	1946
Vernon, James William (Hon.), P, Morganton; Jefferson, 1909.....	1909	1913
Walton, Cyrus Leslie, Ob, Glen Alpine; Med. Coll. of Va., 1931.....	1931	1933

CABARRUS COUNTY SOCIETY¹⁰

President: Nolan, James Onslow, GP, Kannapolis; Jefferson, 1921.....	1921	1922
Secretary: Hill, F. Burnarde, GP, Concord; Temple, 1943.....	1946	1947
Adams, Fletcher Ruff, PH, Concord; Med. Coll. of S. C., 1935.....	1936	1942
Bangle, James Alexander, GP, Concord; N. C. Med. Coll., 1916.....	1916	1920
Barnhardt, Albert Earl, GP, Kannapolis; Univ. of Md., 1933.....	1933	1941
Barrier, Henry Webster, PN, Concord; Chicago Med. Sch., 1921.....	1931	1936
Barringer, Archie L., GP, Mt. Pleasant; Temple, 1936.....	1937	1944
Brandon, Wesley Otis, GP, Concord; Med. Coll. of Va., 1928.....	1929	1932
Brantlev, Thomas H., U, Concord; Med. Coll. of S. C., 1936.....	1936	1939
Bunn, J. J., Mt. Pleasant; N. C. Med. Coll., 1912.....	1913	1915
Burns, Joseph Eugene, Pd, Concord; Med. Coll. of Va., 1923.....	1923	1928
Busby, Julian, GP, Kannapolis; Johns Hopkins, 1931.....	1931	1937
Calder, Duncan Graham, Jr., S, Concord; Univ. of Pa., 1936.....	1940	1940
Caldwell, D. G., T, Concord; Univ. of Pa., 1923.....	1925	1925
Craven, Frederick Thorne, GP, Concord; New York Univ., 1938.....	1938	1940
Ernst, H. E., GP, Concord; Med. Coll. of Va., 1943.....	1947	1948
Floyd, William Russel, S, Concord; Jefferson, 1929.....	1936	1938
Hege, John Roy (Hon.), PH, Concord; Univ. of Md., 1916.....	1916	1917
Johnston, Joseph B., Jr., I, Kannapolis; Tulane, 1940.....	1946	1946
Ketner, Fred Yarkin, GP, Concord; Med. Coll. of Va., 1928.....	1929	1930
King, Richard Morrison (Hon.), GP, Concord; Jefferson, 1903.....	1903	1906
Liles, George W., S, Concord; Duke, 1944.....	1944	1948

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Lubchenko, Nicholas E. (Hon.), GP, Harrisburg; N. C. Med. Coll., 1915.....	1915	1916
MacFadyen, Paul Rutherford, GP, Concord; Univ. of Va., 1929.....	1929	1932
Maulden, Paul Ranzo, S, Kannapolis; N. Y. Univ., 1932.....	1932	1934
Monroe, Lance Truman, ObG, Kannapolis; N. Y. Univ., 1932.....	1937	1938
Moorefield, Robert Hoyle, Kannapolis; Med. Coll. of Va., 1936.....	1936	1941
Morris, Rae Henderson, S, Concord; Jefferson, 1929.....	1929	1932
Nance, James Edwin, OALR, Kannapolis; Med. Coll. of Va., 1929.....	1929	1942
Rankin, R. B., Concord; Tulane, 1917.....	1920	1922
Smerznak, John Joseph, GP, Concord; Hahnemann Med. Sch., 1940.....	1940	1946
Smoot, James Edward (Hon.), GP, Concord; Baltimore Med. Coll., 1893.....	1894	1902
Swann, Joseph Fuller (Hon.), GP, Kannapolis; Coll. of P. & S., Baltimore, 1896.....	1896	1904
Tuttle, Marler Slate, Pd Kannapolis; Temple, 1938.....	1938	1940
Whicker, Guy Lorraine, GP, Kannapolis; Univ. of Md., 1926.....	1926	1928
White, Estus, GP, Kannapolis; Tulane, 1926.....	1926	1940
Widenhouse, Martin Aubrey, GP, Concord; Univ. of Cincinnati, 1925.....	1926	1927
Wilson, Frank E., Deputy Med. Director, Red Cross, Washington, D. C.; Univ. of Tenn., 1933.....	1936	1936
Youngblood, Vernon, GP, Concord; Emory, 1944.....	1946	1947
Yow, Daniel Eugene, I, Concord; Temple, 1935.....	1935	1937
Yow, Ira A. (Hon.), GP, Concord; N. C. Med. Coll., 1906.....	1906	1910

CALDWELL COUNTY SOCIETY¹¹

President: Hedrick, Clyde Reitzel, C, Lenoir; Georgetown Med. Coll., 1925.....	1925	1926
Secretary: Kendrick, Charles Mattox, I, Lenoir; Duke, 1933.....	1939	1939
Barder, Robert L., GP, Lenoir; Duke, 1943.....	1948	1948
Blackwelder, Verne Hamilton, S, Lenoir; Univ. of Pa., 1929.....	1929	1931
Byerly, Wesley Grimes, OALR, Lenoir; Med. Coll. of Va., 1924.....	1924	1925
Corpening, Oscar J. (Hon.), GP, Granite Falls; Univ. Coll. of Med., Richmond, 1906.....	1906	1906
Corpening, William Nye, GP, Granite Falls; Univ. of Md., 1943.....	1943	1944
Davant, Charles, GP, Lenoir; Med. Coll. of S. C., 1945.....	1948	1948
Dula, Frederick Mast, S, Lenoir; Vanderbilt, 1932.....	1934	1934
Fetner, Lawrence Merrill, R, Lenoir; N. C. Med. Coll., 1914.....	1914	1938
Fowler, Shelton F., GP, Lenoir; Vanderbilt, 1938.....	1945	1946
Gibbons, Lucius J., GP & S, Lenoir; Duke, 1940.....	1940	1947
Hammer, Douglas, Jr., U, Lenoir; Med. Coll. of S. C., 1927.....	1927	1930
Hickman, Harry Stuart, Lenoir; Duke, 1938.....	1940	1942
Jones, M. E., GP, Granite Falls; Duke, 1943.....	1943	1947
Kent, Alfred Abraham, Jr., GP, Granite Falls; Jefferson, 1931.....	1931	1934
Lore, Ralph Eli, S, Lenoir; Rush Med. Coll., 1932.....	1933	1937
Russell, Charles R. (Hon.), GP, Granite Falls; Univ. Coll. of Med., Richmond, 1909.....	1909	1918
Templeton, Ralph, Lenoir; Duke, 1942.....	1946	1946
Troutman, Baxter Suttles, GP, Lenoir; Univ. of Md., 1936.....	1936	1939
Wilson, Clarence L. (Hon.); GP, Lenoir; Chattanooga Med. Coll., 1903.....	1903	1905

CAMDEN—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

CARTERET COUNTY SOCIETY¹²

President: Morris, John Watson, S, Morehead City; Univ. of Va., 1936.....	1938	1938
Secretary: Hyde, Frank Edward, ObG, Beaufort; Western Reserve Univ., 1920.....	1925	1926
Bonner, Kemp Plummer Battle (Hon.), Pd, Morehead City; Med. Coll. of Va., 1905.....	1905	1905
Ennett, Nathaniel Thomas, PH, Beaufort; Med. Coll. of Va., 1907.....	1932	1934
Fulcher, Luther, GP, Beaufort; Med. Coll. of S. C., 1937.....	1937	1948
Hatcher, Samuel W., GP, Morehead City; N. Y. Univ., 1942.....	1943	1946
Mason, Manly, GP, Newport; Tulane, 1924.....	1924	1925
Moore, Laurie Walker, Beaufort; Med. Coll. of Va., 1931.....	1931	1933
Morey, Milton B., GP&S, Morehead City; Univ. of Rochester, 1941.....	1944	1946
Royal, Benjamin F. (Hon.), S, Morehead City; Jefferson, 1909.....	1909	1912
Salter, Theodore, GP, Beaufort; Med. Coll. of S. C., 1941.....	1941	1946
Thompson, Sanford Webb, Jr., GP, Morehead City; Med. Coll. of Va., 1913.....	1915	1922
Way, John E., S, Beaufort; Univ. of Md., 1938.....	1938	1946

CASWELL—SEE ALAMANCE-CASWELL

CATAWBA COUNTY SOCIETY¹³

President: Frye, Glenn Raymer, S, Hickory; Jefferson, 1921.....	1921	1923
Secretary: Stewart, Daniel Niven, Jr., GP, Hickory, Univ. of Pa., 1935.....	1935	1938
Barnes, Henry Eugene, Jr., C, Hickory; Univ. of Md., 1935.....	1935	1938
Barringer, Phil L., GP, Hickory; Jefferson, 1942.....	1942	1946
Caldwell, Lawrence McClure, GP, Newton; Univ. of Pa., 1932.....	1932	1934
Clark, William L., I, Hickory; Emory, 1941.....	1947	1948

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Cloninger, Charles Edgar, GP, Conover; Univ. of Md., 1941.....	1941	1943
Cloninger, Kenneth Lee, ALR, Newton; Univ. of Md., 1931.....	1931	1933
Cochrane, James Daniel, GP, Newton; Univ. of Md., 1912.....	1912	1923
†Danehy, Robert J., S, Newton; St. Louis School of Med., 1942.....	1944	1945
Fresh, William Maurice, OALR, Hickory; Medico-Chirurgical Coll. of Phila., 1906.....	1913	1919
Fritz, William Abel, GP, Hickory; Temple, 1933.....	1933	1934
Gast, Charlotte Marie, Hickory; Univ. of Rochester, 1934.....	1942	1943
Griffin, Harold Walker, OALR, Hickory; Emory, 1923.....	1931	1932
Hambrick, Robert Theodore, Pr, Hickory; Tulane, 1923.....	1923	1924
Hunsucker, Charles Lamar, GP, Hickory; N. C. Med. Coll., 1913.....	1913	1920
Jones, Frank Woodson, S, Newton; Med. Coll. of Va., 1934.....	1939	1940
Keever, James Woodfin, T, Hickory; Med. Coll. of Va., 1927.....	1927	1930
Lewis, John Sumter, S, Hickory; Med. Coll. of S. C., 1925.....	1927	1932
Long, Frederick Yount (Hon.), GP, Catawba; N. C. Medical Coll., 1898.....	1898	1904
Long, Glenn (Hon.), GP, Newton; N. C. Med. Coll., 1912.....	1912	1915
MacLauchlin, W. T., GP, Conover; Med. Coll. of S. C., 1941.....	1946	1947
Newbold, H. L., I, Newton; Duke, 1945.....	1945	1948
Nowell, S. C., GP, Hickory; Univ. of Pa., 1921.....	1922	1924
Ormond, Allison Lee, T, Hickory; Jefferson, 1930.....	1930	1935
Pearson, Arthur A., Hickory; Coll. of Med. Evangelists, 1937.....	1939	1940
Rabold, Bernard Louis, S, Newton; Vanderbilt, 1938.....	1947	1948
Shuford, Jacob Harrison, GP, Hickory; Univ. of Pa., 1936.....	1936	1942
Summers, J. Dent, S, Hickory; Univ. of Pa., 1939.....	1939	1947
Whaley, James Davant, U, Hickory; Med. Coll. of S. C., 1925.....	1927	1936
Williams, Thomas Richard, Jr., GP, Hickory; Univ. of Md., 1943.....	1943	1947
Young, Joseph A., GP, Newton; Med. Coll. of S. C., 1938.....	1938	1945

CHATHAM COUNTY SOCIETY¹⁴

President: Wrenn, Grover Cleveland, GP, Siler City; Med. Coll. of S. C., 1937.....	1937	1937
Secretary: Mathiesen, Kenneth Marlin, GP, Pittsboro; Coll. of Med. Evangelists, 1937.....	1938	1939
Byerly, C. H., GP, Siler City; Temple.....	1948	1948
Camp, Horton, GP, Pittsboro; Northwestern Univ., 1932.....	1933	1935
Earle, Jesse Burns, Ob, Siler City; Med. Coll. of Va., 1935.....	1935	1938
Gibson, M. W., GP, Goldston; Med. Coll. of Va., 1925.....	1925	1947
Patman, William Louis, S, Siler City; Harvard, 1921.....	1923	1926
Pleasants, George D., GP, Siler City; Med. Coll. of Va., 1942.....	1942	1945

CHEROKEE COUNTY SOCIETY¹⁵

President: Miller, Harry, GP, Murphy; Emory, 1934.....	1936	1938
Secretary: Plonk, George W., GP, Murphy; Jefferson, 1944.....	1944	1947
Coy, Francis Mathew, GP, Murphy; Univ. of Louisville, 1942.....	1947	1947
Hoover, William Alonzo, S, Murphy; Univ. of Md., 1933.....	1933	1938
McGimsey, James F., Jr., GP, Andrews; Harvard, 1943.....	1946	1947
Parrette, Nettie Coffey, GP, Robbinsville; Univ. of Tenn., 1934.....	1937	1941
Parrette, Richard Grenville, GP, Robbinsville; Univ. of Tenn., 1934.....	1936	1941
Rodda, John S., GP, Andrews; Univ. of Oregon, 1940.....	1946	1946
Scruggs, William Henry, GP, Andrews; Univ. of Md., 1913.....	1915	1917
Taylor, Frank Victor, OALR, Murphy; N. C. Med. Coll., 1915.....	1915	1936
Van Gorder, Charles O., GP, Andrews; Univ. of Tenn., 1939.....	1946	1946
Whitfield, Bryan Watkins, GP, Murphy; Tulane, 1920.....	1934	1936

CHOWAN-PERQUIMANS COUNTIES SOCIETY¹⁶

Brinn, Thomas Preston, GP, Hertford; Univ. of Pa., 1923.....	1923	1927
Davenport, Carlton Alderman, GP, Hertford; Univ. of Md., 1924.....	1924	1926
Hoggard, William Alden (Hon.), GP, Hertford; Med. Coll. of Va., 1907.....	1907	1910
Powell, Jesse Averette (Hon.), GP, Edenton; Coll. of P. & S., Baltimore, 1907.....	1908	1909
Vaughan, Roland Harris, GP, Edenton; Univ. of Va., 1935.....	1938	1939
Ward, Ivie Alphonso (Hon.), OALR, Hertford; Univ. of N. C., 1907.....	1907	1915
Whichard, Murray Parmer (Hon.), PH, Edenton; Univ. of Md., 1910.....	1910	1918
Williams, Leonidas Polk, GP, Edenton; N. Y. Univ., 1918.....	1919	1920
Wisely, Martin Robert, GP, Edenton; Univ. of Va., 1935.....	1937	1938
Wood, Frank, S, Edenton; Univ. of Pa., 1928.....	1931	1932
Wood, Martha, Edenton; Univ. of Pa., 1928.....	1934	1935

CLAY—SEE MACON-CLAY

CLEVELAND COUNTY SOCIETY¹⁷

President: Hamrick, John Carl, S, Shelby; Univ. of Md., 1935.....	1935	1940
Secretary: Lampley, Charles Gordon, Shelby; Bowman Gray Sch. of Med., 1946.....	1946	1947
Anthony, James Edward (Hon.), GP, Kings Mountain; Univ. of Tenn., 1911.....	1911	1912
Bliss, Forrest Edgar, S, Lawndale; Coll. of Med. Evangelists, 1933.....	1933	1934

† Deceased.

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Bridges, Dwight Thomas, GP, Lattimore; Emory, 1926.....	1926	1928
Falls, Fred, GP, Shelby; Tulane, 1930.....	1930	1933
Gibbs, Emmett Wyattman (Hon.), GP, Shelby; Univ. of N. C., 1907.....	1907	1918
Gold, Ben, Pd, Shelby; Univ. of Md., 1920.....	1920	1922
Hamrick, James Yates, Pd, Boiling Springs; Columbia Univ., 1915.....	1915	1917
Hamrick, Ladd Watts, Jr., Boiling Springs; Bowman Gray Sch. of Med., 1946.....	1946	1946
Harbison, John William, S, Shelby; Johns Hopkins, 1919.....	1919	1924
Hendricks, Paul E., GP, Kings Mountain; Bowman Gray Sch. of Med., 1947.....	1947	1948
Holton, A. J., GP, Fallston; Univ. of Pa., 1933.....	1940	1942
Houser, Emanuel Alvin (Hon.), GP, Shelby; Baltimore Univ., 1902.....	1902	1904
Hunter, J. B., Shelby; Bellevue Med. Coll., 1928.....	1932	1947
Johnson, Julius D., OALR, Shelby; Univ. of Ga., 1924.....	1930	1946
Jones, Craig, S, Shelby; Ind. Univ., 1936.....	1937	1938
Kendall, Benjamin Horton, GP, Shelby; Univ. of Md., 1929.....	1929	1931
Lattimore, Everett Beam (Hon.), GP, Shelby; Bellevue Med. Coll., 1897.....	1896	1904
Mitchell, Thomas Brice, GP, Shelby; Univ. of Pa., 1924.....	1925	1927
Moore, D. Forrest, ObG, Shelby; Jefferson, 1925.....	1925	1927
Moore, Ernest Victor, Pd, Shelby; Med. Coll. of S. C., 1933.....	1933	1938
Padgett, Charles King, GP, Shelby; Jefferson, 1930.....	1930	1934
Padgett, Philip Grover, Pd, Kings Mountain; Tulane, 1935.....	1936	1940
Parker, Shepherd Falkener, GP, Shelby; Med. Coll. of Va., 1929.....	1929	1931
Ramseur, William Lee, GP, Kings Mountain; Med. Coll. of S. C., 1926.....	1927	1929
†Royster, Stephen Sampson (Hon.), GP, Shelby; Tenn. Med Coll., 1891.....	1896	1904
Schenck, Sam Moore, S, Shelby; Univ. of Pa., 1923.....	1923	1926
Sherrill, Herbert Rankin, GP, Shelby; Univ. of Tenn., 1926.....	1926	1927
Thompson, Heyward Chevis, T, Shelby; Tulane, 1930.....	1931	1932
Tilt, LeRoy W., Jr., GP, Lawndale; Univ. of Md., 1943.....	1946	1947
Washburn, Chivous Yulan, GP, Mooresboro; Jefferson, 1937.....	1937	1939
Washburn, W. Ryan, GP, Boiling Springs; Jefferson, 1943.....	1943	1947

COLUMBUS COUNTY SOCIETY¹⁸

President: Black, John Riley, Jr., GP, Whiteville; Duke, 1938.....	1942	1943
Secretary: Sadler, Ralph Calvert (Hon.), GP, Whiteville; N. C. Med. Coll., 1912.....	1912	1915
Baldwin, William E., Jr., GP, Whiteville; Duke, 1942.....	1946	1946
Bass, R. E., GP, Chadbourn; Med. Coll. of S. C., 1945.....	1945	1946
Cox, Grover Steadman (Hon.), Pd, Tabor City; N. C. Med. Coll., 1911.....	1911	1914
Floyd, Anderson Gayle, GP, Whiteville; Med. Coll. of S. C., 1937.....	1937	1939
Floyd, Lawrence Dowe (Hon.), GP, Fair Bluff; N. C. Med. Coll., 1911.....	1911	1912
Greene, William Alexander, GP, Whiteville; Northwestern, 1934.....	1935	1936
Howard, John Richard, ObG, Lake Waccamaw; Med. Coll. of Va., 1924.....	1924	1925
Johnson, Floyd (Hon.), PH, Whiteville; Memphis Hosp. Med. Coll., 1903.....	1903	1904
Medlin, La Rue M., Tabor City; Med. Coll. of S. C., 1943.....	1946	1946
Miller, Warren Edwin, S, Whiteville; Emory, 1929.....	1934	1935
Smith, Slade Alvah, OALR, Whiteville; N. C. Med. Coll., 1907.....	1907	1921
Smith, William Franklin (Hon.), GP, Chadbourn; N. C. Med Coll., 1904.....	1904	1905
Walton, George Britain, GP, Chadbourn; Tulane, 1930.....	1930	1935
Welton, Felix Burwell, S, Whiteville; Med. Coll. of Va., 1927.....	1943	1944
†Whitaker, Richard Bidgood (Hon.), GP, Whiteville; Univ. Coll. of Med., Richmond, 1912.....	1912	1913
Wilder, Raboteau Terrell, GP, Fair Bluff; Temple, 1941.....	1941	1942
Williamson, Rossie Marshall, GP, Tabor City; Univ. of Pa., 1937.....	1937	1940
Wyche, Joseph Thomas, GP, Whiteville; Univ. of Pa., 1941.....	1941	1948

CRAVEN COUNTY SOCIETY¹⁹

President: Stevens, Alexander H., Jr., OALR, New Bern; Univ. of Ga., 1932.....	1933	1934
Secretary: Hammond, Alfred Franklin, Jr., GP, New Bern; Jefferson, 1934.....	1934	1937
Ashford, Charles Hall, GP, New Bern; Johns Hopkins, 1927.....	1927	1931
Barker, Christopher Sylvanus, GP, New Bern; Jefferson, 1909.....	1909	1924
Duffy, Charles, Pd, New Bern; Jefferson, 1930.....	1930	1935
Duffy, Richard Nixon (Hon.), S, New Bern; Johns Hopkins, 1906.....	1907	1908
Duffy, Richard Nixon, Jr., GP & S, New Bern; Johns Hopkins, 1940.....	1940	1948
Grady, Franklin M., GP, New Bern; Syracuse Univ., 1932.....	1932	1934
Hollister, William, GP, New Bern; Univ. of Md., 1922.....	1922	1942
Kafer, Oscar Adolph, GP, New Bern; Univ. of Md., 1934.....	1934	1937
Patterson, Joseph Flanner (Hon.), S, New Bern; Jefferson, 1906.....	1906	1906
Pollock, Raymond A. (Hon.), GP, New Bern; Jefferson, 1897.....	1900	1900
Richardson, Ernest G., Jr., GP, New Bern; Jefferson, 1943.....	1943	1948
Wadsworth, Harvey Bryan, GP, New Bern; Johns Hopkins, 1918.....	1918	1923
Watson, Samuel Parks, ALR, New Bern; Univ. of Md., 1901.....	1901	1942
Willis, William Henry, Jr., GP, New Bern; Med. Coll. of Va., 1939.....	1939	1942

† Deceased.

CUMBERLAND COUNTY SOCIETY²⁰

Name and Address

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President: Cogdell, David Melvin, GP, Fayetteville; Med. Coll. of Va., 1938.....	1938	1940
Secretary: McFadyen, Oscar Lee, Jr., I, Fayetteville; Duke, 1940.....	1941	1942
Allgood, Reece Alexander (Hon.), GP, Fayetteville; Univ. of Md., 1912.....	1915	1917
Breeden, William Henry, Pd, Fayetteville; Med. Coll. of S. C., 1938.....	1941	1946
Currie, Daniel Smith, Jr., OALR, Durham; Jefferson, 1936.....	1936	1941
Elfmon, Samuel Leon, I, Fayetteville; Med. Coll. of Va., 1935.....	1936	1937
Farmer, William Anderson, S, Fayetteville; Vanderbilt, 1930.....	1937	1941
Foster, Malcolm Tennyson, PH, Fayetteville; Emory, 1927.....	1927	1930
Greene, James Verdery, GP, Fayetteville; Univ. of Ga., 1938.....	1939	1940
Harry, John McKamie, U, Fayetteville; Med. Coll. of Va., 1934.....	1934	1936
Highsmith, William Cochran, I, Fayetteville; Univ. of Cincinnati, 1931.....	1930	1932
Horan, Robert Vincent, S, Fayetteville; Bowman Gray Sch. of Med., 1944.....	1944	1948
King, Robert, I, Fayetteville; George Washington Univ. Sch. of Med., 1942.....	1942	1947
†Lilly, James Marshall (Hon.), OALR, Fayetteville; Univ. Coll of Med., Richmond, 1903.....	1903	1904
McKay, William Peter, OALR, Fayetteville; Tulane, 1916.....	1916	1921
McLeod, Junius Hazel, GP, Fayetteville; Med. Coll. of S. C., 1926.....	1929	1929
Morgan, Arthur E., R, Fayetteville; Jefferson, 1929.....	1936	1947
Owen, Duncan Shaw, I, Fayetteville; Univ. of Md., 1930.....	1930	1933
Parker, Wade Thomas, S, Fayetteville; Med. Coll. of S. C., 1928.....	1931	1933
Pittman, Raymond Lupton (Hon.), S, Fayetteville; Jefferson, 1910.....	1910	1912
Pittman, William Austin, OALR, Fayetteville; Temple, 1932.....	1932	1934
Rainey, William Thomas (Hon.), I, Fayetteville; Univ. Coll. of Med., Richmond, 1913.....	1913	1916
Reeves, James Leroy, GP, Hope Mills; Temple, 1938.....	1938	1942
Robertson, John Newton, OALR, Fayetteville; Med. Coll. of Va., 1923.....	1923	1924
Shaw, John Alexander, Pd, Fayetteville; Univ. of Pa., 1923.....	1923	1926
Snipes, Richard Dean, Ob, Fayetteville; Duke, 1942.....	1945	1946
Verdery, William Carey, Pd, Fayetteville; Univ. of Ga., 1915.....	1920	1921

CURRITUCK—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DARE—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DAVIDSON COUNTY SOCIETY²¹

President: Lanier, Verne Clifton, GP, Welcome; Med. Coll. of Va., 1937.....	1937	1939
Secretary: Terry, Jarvis Russell (Hon.), Pd, Lexington; Univ. of Louisville, 1911.....	1912	1912
Alexander, George Thomas, GP, Thomasville; Emory, 1922.....	1933	1934
Andrew, John Montgomery, R, Lexington; N. Y. Univ., 1932.....	1932	1934
Ausband, John Rufus, GP, Denton; Bowman Gray Sch. of Med., 1943.....	1943	1948
Block, Milton Edward, GP, Lexington; Tulane, 1933.....	1933	1937
Cathell, Edwin Jennings, S, Lexington; Emory, 1930.....	1930	1932
Cathell, James Luther, S, Lexington; Emory, 1937.....	1937	1939
Clyatt, Claude Eugene, GP, Denton; Univ. of Ga., 1911.....	1923	1924
Covington, Furman P., GP, Thomasville; Jefferson, 1939.....	1939	1946
Craven, Jean Davidson, Pd, Lexington; Johns Hopkins, 1930.....	1933	1935
Farrington, Reno Kirby, S, Thomasville; Univ. of Cincinnati, 1925.....	1925	1927
Gambrell, Grover Cleveland, PH, Lexington; Univ. of Ga., 1912.....	1923	1924
Griffis, John William, Denton; Med. Coll. of Va., 1932.....	1934	1937
Hunt, William Bryce, GP, Lexington; Univ. of Md., 1923.....	1923	1924
Jennings, Royal Garfield, GP, Thomasville; N. C. Med. Coll., 1913.....	1913	1920
Leonard, Jacob Calvin, Jr., OALR, Lexington; Jefferson, 1928.....	1928	1931
Lohr, Dermot, GP, Lexington; Jefferson, 1934.....	1934	1938
Long, Rowland V., I, Lexington; Bowman Gray Sch. of Med., 1946.....	1947	1948
McDonald, Robert Lacy, GP, Thomasville; Northwestern, 1936.....	1937	1938
Mock, Frank Lowe (Hon.), GP, Lexington; N. C. Med. Coll., 1908.....	1908	1908
Myers, Holland Thomas, Lexington; Med. Coll. of Va., 1935.....	1935	1940
†Phillips, Charles Hoover (Hon.), GP, Thomasville; Baltimore Univ. Sch. of Med., 1892.....	1893	1911
Plummer, David Edwin, PH, Thomasville; Med. Coll. of Va., 1934.....	1934	1938
Redwine, James Daniel, Lexington; Emory, 1931.....	1931	1934
Sharpe, Charles Ray (Hon.), OALR, Lexington; Jefferson, 1914.....	1914	1917
Sherrill, Phil Minnis, GP, Thomasville; Vanderbilt, 1931.....	1935	1937
Smith, Foyle P., ObG, Lexington; Washington Univ. Sch. of Med., 1943.....	1943	1945
Smith, J. Alexander (Hon.), S, Lexington; N. C. Med. Coll., 1915.....	1915	1917
Smith, William Gordon, S, Thomasville; Tulane, 1927.....	1927	1928
Valone, J. A., S, Lexington; Univ. of Buffalo, 1936.....	1947	1948
Vestal, Willis Jasper (Hon.), P, Lexington; Coll. of P. & S., Baltimore, 1883.....	1889	1893

DAVIE—SEE ROWAN-DAVIE

† Deceased.

DUPLIN COUNTY SOCIETY²²

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President:		
Secretary: Ewers, Edwin Patterson, GP, Warsaw; Med. Coll. of Va., 1935.....	1936	1939
Hawes, Charles Forest, GP, Rose Hill; Northwestern, 1933.....	1932	1939
Heath, Hunter, GP, Chinquapin; McGill Univ., 1943.....	1947	1948
Hoskins, William H., GP, Whiteville; Med. Coll. of Va., 1931.....	1946	1946
Hundley, Deane, Jr., GP, Wallace; Boston Med. Coll., 1934.....	1936	1938
Hunter, John F. C., R, Magnolia; Med. Coll. of Va., 1940.....	1946	1946
Matthews, George P., GP, Rose Hill; Temple, 1943.....	1943	1947
Norris, Francis Loran, GP, Beaulaville; Univ. of Oklahoma, 1936.....	1937	1942
Robinson, John Daniel, GP, Wallace; Univ. of Md., 1915.....	1915	1917
Straughan, John William, Warsaw; Med. Coll. of Va., 1924.....	1924	1925
Williams, James Marcus, GP, Warsaw; Univ. of Md., 1902.....	1902	1902

DURHAM-ORANGE COUNTIES SOCIETY²³

President: Cekada, Emil Bogomir, I, Durham; Johns Hopkins, 1929.....	1934	1934
Secretary: Trent, Josiah Charles, S, Durham; Univ. of Pa., 1938.....	1940	1941
Adkins, T. F., ObG, Durham; Duke, 1936.....	1946	1946
Alexander, Sydenham B., I, Richmond, Va.; Med. Coll. of Va., 1944.....	1944	1946
Alyea, Edwin Pascal, U, Durham; Johns Hopkins, 1923.....	1930	1930
Anderson, William Banks, OALR, Durham; Johns Hopkins, 1924.....	1927	1928
Arena, Jay Morris, Pd, Durham; Duke, 1932.....	1938	1939
Arnold, Ralph Aranovitz, OALR, Durham; Univ. of Buffalo, 1936.....	1941	1941
Baker, Lenox Dial, Or, Durham; Duke, 1933.....	1937	1937
Baxley, Raiford D., S, Durham; Univ. of Chicago, 1940.....	1940	1948
Baylin, George Jay, R, Durham; Duke, 1937.....	1941	1942
Berryhill, Walter Reece, I&Ed, Chapel Hill; Harvard, 1927.....	1928	1934
Bitting, Numa Duncan (Hon.), S, Durham; Jefferson, 1907.....	1907	1909
Boone, William Henry (Hon.), GP, Durham; N. C. Med. Coll., 1902.....	1902	1904
Boone, William Waldo, GP, Durham; Jefferson, 1923.....	1923	1925
Bowles, Francis Norman, ObG, Durham; Med. Coll. of Va., 1924.....	1924	1926
Brinkhous, Kenneth M., Ed, Chapel Hill; Univ. of Iowa, 1932.....	1947	1947
Brown, Ivan W., Jr., S, Durham; Duke, 1940.....	1947	1947
Bryan, A. Hughes, I, Chapel Hill; Harvard, 1931.....	1947	1948
Bugg, E. I., Jr., Or, Durham; Johns Hopkins, 1937.....	1946	1946
Bullitt, James Bell (Hon.), Path, Chapel Hill; Univ. of Va., 1897.....	1914	1915
Burwell, Walter Brodie, I, Henderson; Tulane, 1941.....	1945	1946
Callaway, Jasper Lamar, D, Durham; Duke, 1932.....	1937	1937
Carroll, R. Charman, PN, Durham; Univ. of Colorado, 1939.....	1941	1941
Carter, Francis Bayard, ObG, Durham; Johns Hopkins, 1925.....	1925	1931
Cooper, Albert Derwin, A, Durham; George Washington Univ., 1931.....	1933	1934
Coppridge, William Maurice, U, Durham; Jefferson, 1918.....	1919	1920
Craig, Robert Lawrence, N, Durham; Johns Hopkins, 1935.....	1939	1940
Crane, George L., I, Durham; Cornell, 1940.....	1942	1947
Creadick, Robert N., ObG, Durham; Yale, 1937.....	1946	1947
Davison, Wilburt Cornell, Pd&Ed, Durham; Johns Hopkins, 1917.....	1927	1928
Dees, John Essary, U, Durham; Univ. of Va., 1933.....	1940	1940
Dees, Susan Coons, Pd, Durham; Johns Hopkins, 1935.....	1939	1941
Dick, MacDonald, I, Durham; Johns Hopkins, 1928.....	1940	1941
Eagle, Watt Weems, ALR, Durham; Johns Hopkins, 1925.....	1929	1930
Easley, Eleanor Beamer, ObG, Durham; Duke, 1934.....	1940	1940
Erickson, Cyrus Conrad, Path, Durham; Univ. of Minnesota, 1932.....	1940	1941
Fassett, Burton Watson (Hon.), OALR, Durham; Baltimore Med. Coll., 1898.....	1899	1909
Ferguson, George Burton, OALR, Durham; Jefferson, 1932.....	1937	1938
Fields, Leonard Earl, GP, Chapel Hill; Univ. of Pa., 1929.....	1929	1931
Fleming, Ralph Gibson, GP, Durham; Univ. of Pa., 1936.....	1936	1938
Flowers, Arthur H., Jr., D, Durham; Duke, 1942.....	1944	1948
Forbus, Wiley Davis, Path, Durham; Johns Hopkins, 1923.....	1929	1935
Forrest, Daniel Effand, GP, Hillsboro; Univ. of Md., 1930.....	1930	1933
Fox, Frances Hill, I, Durham; Univ. of Pa., 1935.....	1940	1942
Fox, Herbert Junius, I, Durham; Duke, 1935.....	1940	1941
Gardner, Clarence Ellsworth, Jr., S, Durham; Johns Hopkins, 1928.....	1932	1932
Garvin, David O., PH, Chapel Hill; Med. Coll. of S. C., 1932.....	1946	1947
Glenn, John C., Jr., R, Quantico, Va.; Duke, 1943.....	1947	1947
Goddard, David W., U, Durham; Duke, 1939.....	1942	1947
Goudge, Mabel Ensworth, P, Durham; Ohio State Univ., 1922.....	1925	1927
Graham, John Borden, Path, Chapel Hill; Cornell, 1942.....	1942	1947
Graham, William Alexander, ObG, Durham; Univ. of Pa., 1932.....	1932	1937
Graves, Robert Williams, N, Durham; Duke, 1933.....	1937	1938
Gray, Paul M., S, Durham; Univ. of Arkansas, 1936.....	1948	1948
Greenhill, Maurice Herzberger, PN, Durham; Univ. of Chicago, 1936.....	1940	1941

ROSTER OF FELLOWS

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<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Grimson, Keith Sanford, S, Durham; Rush Med. Coll., 1933.	1942	1942
Gunter, June U., Path, Durham; Jefferson, 1936.	1936	1937
Hamblen, Edwin Crowell, G, Durham; Univ. of Va., 1928.	1931	1931
Hansen-Pruss, Oscar Carl Edward, I, Durham; Johns Hopkins, 1924.	1930	1931
Hardee, Walter Person, OALR, Durham; Jefferson, 1912.	1912	1924
Harris, Isaac E., Jr., S, Durham; Jefferson, 1933.	1933	1939
Harris, Jerome S., Pd, Durham; Harvard, 1933.	1940	1947
Hart, Julian Deryl, S, Durham; Johns Hopkins, 1921.	1929	1930
Harton, Roman Albert, GP, Durham; Temple, 1934.	1935	1936
Hedgpeth, Edward McGowan, I, Chapel Hill; Univ. of Pa., 1931.	1931	1934
Hendrix, James Paisley, I, Durham; Univ. of Pa., 1930.	1930	1939
Hesser, Frederick H., P, Durham; Johns Hopkins, 1937.	1944	1945
Hickam, John B., I, Durham; Harvard, 1940.	1947	1948
Hicks, Calvin Shaw (Hon.), GP, Durham; Univ. of Md., 1904.	1904	1904
Hohman, Leslie B., P, Durham; Johns Hopkins, 1917.	1946	1947
Holloway, Joseph Clark, GP, Durham; Tulane, 1927.	1928	1929
Jones, Thomas Thweatt, D, Durham; Johns Hopkins, 1932.	1934	1935
Josselson, Albert J., I, Durham; Northwestern, 1944.	1948	1948
Kempner, Walter, I, Durham; Univ. of Heidelberg, 1926.	1943	1943
Kerns, Thomas Cleveland (Hon.), OALR, Durham; Univ. of Pa., 1911.	1911	1913
Lindsay, Robert Boyd, PH, Chapel Hill; Jefferson, 1940.	1940	1947
London, Arthur Hill, Jr., Pd, Durham; Univ. of Pa., 1927.	1927	1930
Lyman, Richard Sherman, P, Durham; Johns Hopkins, 1921.	1940	1941
MacNider, William deBerniere (Hon.), Phar, Chapel Hill; Univ. of N. C., 1903.	1903	1903
Manning, Isaac Hall, Jr., I, Durham; Harvard, 1935.	1938	1939
Markham, Blackwell, S, Durham; Harvard, 1922.	1922	1925
Martin, Donald Stover, Pd, Durham; Univ. of Rochester, 1930.	1938	1939
Martin, Ruth Campbell, Anes, Durham; Washington Univ., 1941.	1947	1948
McBryde, Angus Murdoch, Pd, Durham; Univ. of Pa., 1928.	1931	1932
McCracken, Joseph Pickett, I, Durham; Duke, 1937.	1938	1941
McCutcheon, William Benson, S, Durham; Med. Coll. of Va., 1921.	1921	1925
McKee, Lewis Middleton, I, Durham; Temple, 1933.	1934	1934
McPherson, Samuel Dace (Hon.), OALR, Durham; Univ. of Md., 1903.	1903	1904
Menefee, Elijah Eugene, Jr., I, Durham; Duke, 1936.	1940	1941
Miale, John B., Path, Chapel Hill; Univ. of Rochester, 1940.	1945	1946
Morgan, William Gardner, PH, Chapel Hill; Univ. of Pa., 1931.	1931	1937
Myers, Jack D., I, Durham; Stanford Univ., 1937.	1947	1948
Nichols, Rhodes Edmond, Jr., I, Durham; Univ. of Pa., 1930.	1930	1932
Nicholson, William McNeal, I, Durham; Johns Hopkins, 1931.	1935	1937
Norton, John W. R., PH, Raleigh; Vanderbilt, 1928.	1928	1932
Odom, Guy L., NS, Durham; Tulane, 1933.	1943	1944
Orgain, Edward Stewart, C, Durham; Univ. of Va., 1930.	1934	1936
Patterson, Fred Geer, I, Chapel Hill; Univ. of Pa., 1937.	1937	1940
Patterson, Hubert C., S, Durham; Harvard, 1937.	1947	1947
Pearse, Richard Lehmer, ObG, Durham; Harvard, 1931.	1938	1938
Perry, David Russell, I, Durham; Jefferson, 1919.	1919	1922
Perry, David Russell, Jr., Pd, Durham; Bowman Gray Sch. of Med., 1946.	1947	1948
Persons, Elbert Lapsley, I, Durham; Harvard, 1927.	1931	1931
Pickrell, Kenneth L., S, Durham; Johns Hopkins, 1935.	1944	1945
Powell, Albert Henry, GP, Durham; Univ. of Ga., 1924.	1925	1926
Raney, Richard Beverly, Or, Durham; Harvard, 1930.	1934	1935
Reeves, Robert James, R, Durham; Baylor Univ., 1924.	1930	1930
Richardson, William Perry, GP, Chapel Hill; Med. Coll. of Va., 1928.	1928	1929
Riggsbee, Arthur Eugene (Hon.), GP, Durham; Univ. of N. C., 1909.	1909	1911
Riggsbee, John B., GP, Chapel Hill; Vanderbilt, 1943.	1946	1946
Roberson, Foy (Hon.), S, Durham; Jefferson, 1909.	1909	1912
Roberts, Bennett Watson, Pd, Durham; Univ. of Md., 1924.	1924	1927
Roberts, Bryan Nazer, GP, Hillsboro; Univ. of Md., 1925.	1925	1926
Roberts, Louis Carroll, U, Durham; Duke, 1933.	1935	1940
Robertson, Edwin Mason, S, Durham; Tulane, 1912.	1912	1929
Rodwell, Eleanor, GP, Durham; Temple, 1942.	1942	1944
Rogers, Gaston Wilder, PH, Chapel Hill; Birmingham Med. Coll., 1911.	1937	1941
Ross, Robert Alexander, ObG, Durham; Univ. of Pa., 1922.	1922	1926
Rosser, Robert Guthrie, Jr., I, Durham; Med. Coll. of S. C., 1943.	1943	1946
Ruffin, Julian Meade, I, Durham; Univ. of Va., 1926.	1930	1931
Rundles, R. Wayne, I, Durham; Duke, 1940.	1946	1946
Schiebel, Herman Max, S, Durham; Johns Hopkins, 1933.	1938	1940
Sealey, Will C., S, Durham; Emory, 1936.	1946	1947
Shuler, James Edward, GP, Durham; Med. Coll. of Va., 1914.	1920	1922
Silver, George A., P, Durham; Duke, 1938.	1947	1948
Skinner, Benjamin S., Pd, Durham; Washington Univ., 1940.	1940	1946
Smith, Annie Thompson, GP, Durham; Univ. of Illinois, 1923.	1925	1926
Smith, David Tillerson, I, Durham; Johns Hopkins, 1922.	1931	1931
Smith, Erma A., I, Durham; Rush Med. Coll., 1933.	1946	1947

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Smith, Ruby A., I, Chapel Hill; Univ. of Md., 1940.....	1942	1943
Speas, William Paul, Jr., GP, Durham; Univ. of Pa., 1939.....	1939	1946
†Speed, Joseph Anderson (Hon.), GP, Durham; Jefferson, 1914.....	1914	1916
Spikes, Norman Owen, GP, Durham; Jefferson, 1924.....	1924	1927
Stanford, Lois Foote, I, Durham; Univ. of Pa., 1921.....	1923	1924
Stanford, William Raney, I, Durham; Univ. of Pa., 1919.....	1919	1923
Stead, Eugene A., Jr., I, Durham; Emory, 1932.....	1947	1947
Stocker, Frederick W., Oph, Durham; Univ. of Bern, Switzerland, 1919.....	1943	1943
Sweaney, Hunter McGuire, S, Durham; Univ. of Pa., 1919.....	1919	1920
Thomas, Walter Lee, ObG, Durham; Univ. of Va., 1931.....	1937	1938
Turner, Larry, OALR, Durham; Duke, 1939.....	1941	1947
Turner, Violet H., ObG, Durham; Univ. of Chicago, 1940.....	1944	1945
Tyler, Earl Runyon, D, Durham; Jefferson, 1923.....	1923	1927
Vaughan, Walter Weddle, R, Durham; Jefferson, 1933.....	1933	1938
Watkins, Charles, P, Durham; Univ. of Tenn., 1938.....	1940	1948
†Watkins, George Thomas, Jr. (Hon.), GP, Durham; Jefferson, 1915.....	1915	1917
Watkins, William Merritt, GP, Durham; Jefferson, 1923.....	1923	1925
Watson, George A., Pd, Durham; Duke, 1939.....	1939	1947
Whilden, James Griffith, R, Durham; Duke, 1937.....	1946	1947
Wilkins, Robert Bruce (Hon.), OALR, Durham; N. C. Med. Coll., 1913.....	1913	1917
Wilson, James Stephenson, S, Durham; Duke, 1937.....	1947	1947
Woodhall, Maurice Barnes, NS, Durham; Johns Hopkins, 1930.....	1937	1937
Wright, John Joseph, PH, Chapel Hill; Vanderbilt, 1935.....	1940	1942

EDGEcombe-NASH COUNTIES SOCIETY²⁴

President: Bailey, Clarence Whitfield, OALR, Rocky Mount; Jefferson, 1925.....	1925	1930
Secretary: Bell, Orville Earl, GP, Rocky Mount; Oklahoma Univ., 1936.....	1937	1938
Anderson, Richard Speight, S, Whitakers; Univ. of Md., 1924.....	1924	1932
Bass, Spencer Pippin (Hon.), GP, Tarboro; Univ. of Va., 1906.....	1907	1909
Battle, Margaret White, ObG, Rocky Mount; Univ. of Mich., 1933.....	1936	1937
Battle, Newsom Pittman, S, Rocky Mount; Univ. of Pa., 1926.....	1930	1931
Boice, Edmund Simpson (Hon.), S, Rocky Mount; Univ. of Pa., 1909.....	1914	1915
Brantley, Hassell (Hon.), OALR, Spring Hope; Jefferson, 1888.....	1888	1901
Brantley, Julian Chisholm, GP, Spring Hope; Jefferson, 1916.....	1916	1922
Brantley, Julian Chisholm, Jr., ObG, Rocky Mount; Jefferson, 1943.....	1944	1948
Chamblee, John S., PH, Nashville; Emory, 1938.....	1938	1942
Crumpler, James Fulton, Pd, Rocky Mount; N. Y. Univ., 1930.....	1930	1935
Cutchin, Joseph Henry (Hon.), GP, Whitakers; Univ. Coll. of Med., Richmond, 1911.....	1911	1915
Daughtridge, Arthur Lee, R, Rocky Mount; Univ. of Md., 1924.....	1924	1924
Deans, Arthur Wood (Hon.), GP, Battleboro; Med. Coll. of Va., 1915.....	1915	1917
Dixon, William Harvey, Pr, Rocky Mount; Jefferson, 1919.....	1919	1922
Fleming, Major Ivy, R, Rocky Mount; Jefferson, 1904.....	1906	1919
Gibbs, Stuart Wynn, R, Rocky Mount; Bowman Gray Sch. of Med., 1944.....	1944	1948
Grant, H. B., Pd, Rocky Mount; Duke, 1941.....	1945	1948
Green, William Wills (Hon.), S, Tarboro; Univ. of N. C., 1908.....	1908	1910
Hooks, W. Borden, GP, Tarboro; Richmond, 1930.....	1930	1933
Hussey, Howard S., Hosp. Res., Tarboro; Jefferson, 1942.....	1942	1943
Jones, William Samuel, GP, Nashville; Med. Coll. of Va., 1927.....	1927	1927
Justa, Samuel Harry, U, Rocky Mount; Med. Coll. of Va., 1933.....	1934	1934
Knowles, Daniel Lamont, GP, Rocky Mount; Univ. of Pa., 1918.....	1918	1920
Kornegay, Lemuel Weyher, Rocky Mount; Duke, 1943.....	1943	1943
Kornegay, Robert Dumais, Or, Rocky Mount; Duke, 1939.....	1941	1943
Lane, John Loftin (Hon.), OALR, Rocky Mount; N. C. Med. Coll., 1906.....	1906	1906
Large, Hiram Lee (Hon.), U, Rocky Mount; Med. Coll. of Va., 1917.....	1918	1918
†Martin, John Henry (Hon.), GP, Red Oak; Univ. of Nashville, 1903.....	1904	1916
McDowell, William Kitchin, OALR, Tarboro; Jefferson, 1931.....	1931	1934
Noell, Robert Holman, GP, Rocky Mount; Univ. of Md., 1916.....	1916	1920
Perry, Ernest Monroe (Hon.), Oph, Rocky Mount; Coll. of P. & S., Baltimore, 1907.....	1907	1913
Poole, P. P., I, Rocky Mount; Duke, 1940.....	1947	1948
Raby, James Grover (Hon.), Pd, Tarboro; Univ. Coll. of Med., Richmond, 1911.....	1911	1913
Raby, William Thomas, Asst. Hosp. Res., Baltimore, Md.; Univ. of Md., 1942.....	1942	1943
Roberson, E. L., S, Tarboro; Univ. of Md., 1934.....	1934	1937
Robertson, Leon W., GP, Rocky Mount; Bowman Gray Sch. of Med., 1945.....	1945	1947
Royster, Thomas Hays (Hon.), OALR, Tarboro; Univ. Coll. of Med., Richmond, 1908.....	1908	1914
Smethie, William, S, Wadesboro; Med. Coll. of Va., 1939.....	1946	1946
Smith, Claiborne Thweat, I, Rocky Mount; Univ. of Pa., 1918.....	1918	1920
Smith, Gordon, GP, Rocky Mount; Univ. of Pa., 1940.....	1943	1943
Smith, John Goodrich, I, Rocky Mount; Duke, 1934.....	1937	1938
Speight, James Ambler (Hon.), GP, Rocky Mount; Univ. of La., 1914.....	1915	1916
Stone, Marvin Lee, GP, Rocky Mount; Univ. of Pa., 1924.....	1928	1928
Sykes, Joy Verle, GP, Rocky Mount; Univ. of Pa., 1929.....	1929	1930

† Deceased.

ROSTER OF FELLOWS

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<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Thorp, Adam Tredwell, ObG, Rocky Mount; Univ. of Pa., 1921.....	1921	1923
Vann, Junius Richardson, GP, Spring Hope; Jefferson, 1917.....	1917	1920
Wall, William Stanley, Ob, Rocky Mount; Univ. of Pa., 1933.....	1933	1936
Way, Samuel Eason, S, Rocky Mount; Univ. of Md., 1933.....	1933	1938
Weeks, Kenneth Durham, I, Rocky Mount; Duke, 1939.....	1940	1946
Whitaker, James Allen, PH, Rocky Mount; Temple, 1933.....	1934	1935
Whitley, Robert Macon, Jr., I, Rocky Mount; Duke, 1940.....	1940	1943
Willis, Byrd Charles (Hon.), S, Orange, Va.; Med. Coll. of Va., 1909.....	1916	1917
Wright, John Everett, GP, Macclesfield; Jefferson, 1937.....	1937	1938
Wright, Ken, S, Rocky Mount; Columbia Univ., 1941.....	1947	1948

FORSYTH COUNTY SOCIETY²⁵

President: Hart, Oliver James, U, Winston-Salem; Med. Coll. of S. C., 1925.....	1930	1932
Secretary: Reid, Charles Hamilton, Jr., I, Winston-Salem; Duke, 1942.....	1945	1945
Adams, Anne Stephenson, GP, Concord; Woman's Med. Coll. of Pa., 1937.....	1939	1940
Adams, Carlton Noble, ObG, Winston-Salem; Duke, 1932.....	1936	1937
Ader, Otis Ladeau, PH, Walkertown; Univ. of Pa., 1925.....	1925	1927
Anderson, Katherine, Pd, Winston-Salem; Cornell, 1940.....	1943	1944
Andrew, Lacey Allen, Jr., U, Winston-Salem; Duke, 1932.....	1932	1936
Avery, Edward Stanley, I, Winston-Salem; Univ. of Pa., 1928.....	1928	1930
Beavers, James Wallace, GP, Kernersville; Univ. of Pa., 1930.....	1930	1935
Belding, Helen, I, Winston-Salem; Boston Univ., 1943.....	1947	1948
Belton, Joseph Franklin (Hon.), GP, Winston-Salem; Univ. of Pa., 1914.....	1914	1916
Benbow, Edgar Vernon, S, Winston-Salem; Jefferson, 1925.....	1925	1928
Benbow, John Thomas, GP, Winston-Salem; N. C. Med. Coll., 1910.....	1910	1920
Bender, John Robert, GP, Winston-Salem; Med. Coll. of Va., 1935.....	1935	1939
Bowers, Marvin Arthur (Hon.), GP, Winston-Salem; Tulane, 1911.....	1911	1914
Bradford, George Edwin, ALR, Winston-Salem; Univ. of Tenn., 1933.....	1935	1936
Bradshaw, Howard Holt, S, Winston-Salem; Jefferson, 1927.....	1927	1942
Brooks, Ernest Bruce, I, Winston-Salem; Duke, 1933.....	1935	1936
Bunn, Richard Wilmot, I, Winston-Salem; Temple, 1935.....	1936	1937
Butler, Leroy Jefferson, Pd, Winston-Salem; Med. Coll. of Va., 1915.....	1920	1921
Carlton, Romulus Lee (Hon.), PH, Winston-Salem; Univ. of Md., 1906.....	1906	1906
Carpenter, Coy Cornelius, Path&Ed, Winston-Salem; Syracuse Univ., 1924.....	1924	1927
Casstevens, John Claude, GP, Winston-Salem; Med. Coll. of Va., 1926.....	1926	1927
Cayer, David, GE, Winston-Salem; Duke, 1938.....	1944	1944
Combs, Fielding, ALR, Winston-Salem; Med. Coll. of Va., 1923.....	1931	1932
Conrad, Elizabeth, Pd, Winston-Salem; Johns Hopkins, 1943.....	1946	1946
Cooke, Grady Carlyle, S, Winston-Salem; Univ. of Md., 1919.....	1919	1920
Couch, Vanderbilt Franklin, OALR, Winston-Salem; Columbia, 1911.....	1911	1919
Cox, William Foscue, I, Winston-Salem; Med. Coll. of Va., 1942.....	1947	1947
Craig, Sylvester Douglas (Hon.), I, Winston-Salem; Tulane, 1908.....	1911	1912
Dalton, William Nicholson (Hon.), GP, Winston-Salem; N. C. Med. Coll., 1904.....	1904	1905
Davis, John Preston, I, Winston-Salem; Univ. of Pa., 1934.....	1937	1938
Davis, Thomas W. (Hon.), ALR, Winston-Salem; Med. Coll. of S. C., 1898.....	1899	1899
Donnelly, James Ford, ObG, Winston-Salem; Univ. of Chicago, 1939.....	1941	1946
Drummond, Charles Stitt, Pr, Winston-Salem; Univ. of Ga., 1930.....	1933	1933
Fearrington, James Cornelius Pass, I, Winston-Salem; Rush Med. Coll., 1930.....	1933	1934
Forsyth, H. Francis, Or, Winston-Salem; Univ. of Michigan, 1940.....	1941	1946
Fowler, Henry Jackson, GP, Walnut Cove; Bowman Gray Sch. of Med., 1946.....	1947	1948
Fritz, Oliver Grady, GP, Walkertown; Med. Coll. of Va., 1931.....	1932	1940
Garvey, Fred Kesler, U, Winston-Salem; Univ. of Cincinnati, 1925.....	1925	1932
Gilbert, Edward Lee, GP, Winston-Salem; Univ. of Tenn., 1932.....	1935	1936
Goswick, Harry Wilson, Jr., S, Winston-Salem; Univ. of Tenn., 1931.....	1934	1935
Green, Harold David, I & Phy, Winston-Salem; Western Reserve Univ., 1931.....	1945	1945
Griffith, Mary Irene, Ob, Winston-Salem; Univ. of Tenn., 1942.....	1942	1946
Grimes, William Lawrence (Hon.), S, Winston-Salem; Johns Hopkins, 1910.....	1910	1915
Harrell, George Thomas, Jr., I, Winston-Salem; Duke, 1936.....	1940	1940
Harrill, James Albert, ALR, Winston-Salem; Univ. of Pa., 1935.....	1935	1939
Hedrick, Richard E., GP, Walkertown; Med. Coll. of S. C., 1943.....	1943	1947
Helsabeck, Belmont Augustus, GP, Winston-Salem; Med. Coll. of Va., 1931.....	1931	1936
Helsabeck, Chester Joseph, GP, Walnut Cove; Univ. of Md., 1919.....	1919	1922
Helsabeck, Rupert Sylvester, GP, King; N. C. Med. Coll., 1913.....	1913	1936
Henley, Ruth Dixon, Ob, Winston-Salem; Woman's Med. Coll. of Pa., 1935.....	1937	1938
Henley, Thomas F., Pd, Winston-Salem; Harvard, 1938.....	1943	1947
Herdon, Claude Nash, Jr., I, Winston-Salem; Jefferson, 1939.....	1939	1941
Hightower, Felda, S, Winston-Salem; Univ. of Pa., 1933.....	1933	1936
Holmes, George Washington, Or, Winston-Salem; Med. Coll. of Va., 1931.....	1931	1933
Holt, Lawrence Byerly, Oph, Winston-Salem; Bowman Gray Sch. of Med., 1945.....	1945	1948
Hurdle, Samuel Walker (Hon.), GP, Winston-Salem; Jefferson, 1914.....	1914	1915
Hutaff, Lucile, I, Winston-Salem; Univ. of Rochester, 1940.....	1940	1945
Izlar, Henry LeRoy (Hon.), GP, Winston-Salem; Med. Coll. of S. C., 1915.....	1916	1917

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Jeffreys, Everett O., NS, Winston-Salem; Washington Univ., 1934.....	1938	1945
Johnson, Gaston Frank, R, Winston-Salem; Jefferson, 1934.....	1934	1938
Johnson, Paul William, Ob, Winston-Salem; Univ. of Louisville, 1930.....	1932	1933
Johnson, Wingate Memory (Hon.), I, Winston-Salem; Jefferson, 1908.....	1908	1910
Jones, Beverly Nicholas, ALR, Winston-Salem; Med. Coll. of Va., 1915.....	1915	1921
Jones, Beverly Nicholas, Jr., OALR, Winston-Salem; Duke, 1945.....	1945	1945
Kapp, Constantine Hege, GP, Winston-Salem; McGill Univ., 1938.....	1938	1940
Keiger, Oscar R. (Hon.), GP, Winston-Salem; Univ. Coll. of Med., Richmond, 1911.....	1911	1915
Kelley, Douglas M., P, Winston-Salem; Univ. of California, 1937.....	1937	1947
Kelsey, Weston M., Pd, Winston-Salem; Johns Hopkins, 1936.....	1936	1946
Kerr, James Edwin (Hon.), GP, Winston-Salem; Univ. of Md., 1897.....	1898	1898
Kiger, Roger S., GP, Winston-Salem; Bowman Gray Sch. of Med., 1945.....	1945	1948
King, Edward Sandling, Pd, Winston-Salem; Jefferson, 1927.....	1927	1930
Kirby, William Leslie, D, Winston-Salem; Vanderbilt, 1925.....	1926	1930
Lassiter, Vernon Clark, S, Winston-Salem; Emory, 1925.....	1928	1929
Lawson, Robert Barrett, Pd, Winston-Salem; Harvard, 1936.....	1940	1941
Lindsay, Bert G., Jr., GP, Walnut Cove; Baylor Univ., 1946.....	1947	1947
Lock, Frank Ray, ObG, Winston-Salem; Tulane, 1935.....	1935	1941
Long, Vann McKee (Hon.), U, Winston-Salem; N. C. Med. Coll., 1906.....	1906	1908
Mackie, Thomas T., I, Winston-Salem; Columbia, 1924.....	1926	1947
MacMillan, Elbert Alexander, PN, Winston-Salem; Univ. of Pa., 1933.....	1933	1937
Marr, James T., R, Winston-Salem; Univ. of Kansas, 1937.....	1937	1946
Marshall, James Flournoy, S, Winston-Salem; Univ. of Pa., 1931.....	1931	1935
Martin, Benjamin Franklin, I, Winston-Salem; Jefferson, 1936.....	1936	1940
Martin, Lester Poindexter, OALR, Mocksville; Jefferson, 1920.....	1920	1921
Masland, Richard L., N, Winston-Salem; Univ. of Pa., 1935.....	1937	1947
Mauzy, Charles Hampton, Jr., ObG, Winston-Salem; Univ. of Va., 1933.....	1938	1939
McDowell, Harold Clyde, Or, Winston-Salem; Jefferson, 1931.....	1931	1936
McMillan, Robert Lindsay, C, Winston-Salem; Duke, 1933.....	1936	1938
Meads, Manson, I, Winston-Salem; Temple, 1943.....	1947	1947
Menzies, Henry Harding, ObG, Winston-Salem; Med. Coll. of Va., 1923.....	1923	1926
Moore, Robert Alexander (Hon.), Or, Winston-Salem; N. C. Med. Coll., 1911.....	1911	1917
Mordecai, Alfred, PH, Winston-Salem; Univ. of Md., 1914.....	1914	1945
Morehead, Robert Page, Path, Winston-Salem; Jefferson, 1936.....	1936	1938
Munt, Herbert Frederick (Hon.), Or, Winston-Salem; Med. Coll. of Va., 1911.....	1914	1915
Nanzetta, Leonard, GP, Rural Hall; Univ. of Mich., 1942.....	1946	1946
Norfleet, Charles Millner, Jr., U, Winston-Salem; Univ. of Pa., 1937.....	1937	1941
Odom, Robert Taft, S, Winston-Salem; Univ. of Tenn., 1934.....	1941	1942
Ogburn, Lundie Calvin, ObG, Winston-Salem; Jefferson, 1928.....	1928	1936
Pegg, Fred Grant, PH, Winston-Salem; Med. Coll. of Va., 1934.....	1934	1936
Perryman, Olin C., GP, Winston-Salem; Duke, 1941.....	1947	1947
Pfohl, Samuel Frederick (Hon.), GP, Winston-Salem; Univ. of Pa., 1894.....	1898	1898
Pool, Bennette Baucom, A, Winston-Salem; Jefferson, 1923.....	1923	1925
Pool, Charles Glenn, Pd, Winston-Salem; Tulane, 1924.....	1924	1927
Postlethwait, Raymond Woodrow, S, Winston-Salem; Duke, 1941.....	1947	1948
Rankin, Samuel Wharton (Hon.), OALR, Winston-Salem; Jefferson, 1912.....	1912	1914
Roberts, R. Winston, Oph, Winston-Salem; Duke, 1941.....	1947	1948
Rousseau, James Parks, R, Winston-Salem; Univ. of Md., 1918.....	1920	1920
Schallert, Paul Otto (Hon.), GP, Orlando, Fla.; Univ. of Illinois, 1904.....	1911	1912
Selman, Joseph, R, Winston-Salem; Western Reserve Univ. Sch. of Med., 1940.....	1945	1945
Slate, John Samuel (Hon.), GP, Winston-Salem; Univ. Coll. of Med., Richmond, 1900.....	1899	1904
†Spainhour, Ellis H. (Hon.), GP, Winston-Salem; Baltimore Med. Coll., 1898.....	1898	1898
Speas, Dallas C., GP, Winston-Salem; Univ. of Md., 1911.....	1913	1924
Speas, William Paul (Hon.), Oph, Winston-Salem; Univ. Coll. of Med., Richmond, 1911.....	1911	1912
Spicer, Richard Williams (Hon.), Ob, Winston-Salem; Univ. of Pa., 1911.....	1910	1916
Sprunt, William Hutchinson, Jr., S, Winston-Salem; Univ. of Pa., 1918.....	1918	1925
Starling, Howard Montfort, S, Winston-Salem; Med. Coll. of Va., 1931.....	1931	1937
Stimpson, Robert Tula, GP, Winston-Salem; Univ. of Pa., 1927.....	1927	1930
Street, Claudius Augustus, Pd, Winston-Salem; Harvard, 1918.....	1918	1925
Strickland, Edward F. (Hon.), GP, Winston-Salem; Univ. of N. Y., 1887.....	1887	1893
Thomas, Wilbur Clyde, Path, Winston-Salem; Univ. of Md., 1939.....	1941	1942
Thompson, Lloyd J., P, Winston-Salem; Washington Univ., 1919.....	1919	1947
Tuttle, Rueben Gray (Hon.), GP, Winston-Salem; N. C. Med. Coll., 1909.....	1909	1913
Valk, Arthur DeTalma (Hon.), S, Winston-Salem; Johns Hopkins, 1910.....	1913	1914
Vann, Herbert Moffett, Anat, Winston-Salem; Jefferson, 1917.....	1920	1923
Wall, Roscoe LeGrand (Hon.), Anes, Winston-Salem; Jefferson, 1912.....	1912	1915
Wedde, T. S., Path, Winston-Salem; Coll. of Med. Evangelists, 1937.....	1946	1948
Welfare, Charles R., I, Winston-Salem; Univ. of Pa., 1940.....	1940	1947
Whittington, James Benbow (Hon.), Hosp Ad, Winston-Salem; N. C. Med. Coll., 1911.....	1911	1911
Wiggins, John Carroll, Jr., I, Winston-Salem; Harvard, 1941.....	1947	1948
Wilsey, John D., Oph, Winston-Salem; Johns Hopkins, 1941.....	1944	1944
Wolfe, Ralph Verlon, GP, Winston-Salem; Univ. of Indiana, 1937.....	1940	1941

ROSTER OF FELLOWS

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Wright, Orpheus Evans, GP, Winston-Salem; Emory, 1924.....	1924	1928
Wyatt, Wortham (Hon.), D, Winston-Salem; Univ. of Pa., 1913.....	1913	1916
Wylie, William deKalb, I, Winston-Salem; Univ. of Va., 1924.....	1926	1928
Yoder, Paul Allison, T, Winston-Salem; Univ. of Pa., 1923.....	1923	1925

FRANKLIN COUNTY SOCIETY²⁶

President: Wheless, Thomas O., GP, Louisburg; Bowman Gray Sch. of Med., 1943.....	1943	1947
Secretary: Nowell, James S., GP, Franklinton; Temple, 1943.....	1943	1947
Bland, Charles Atlas, GP, Louisburg; Med. Coll. of Va., 1935.....	1937	1938
Burt, Samuel Perry (Hon.), GP, Louisburg; Coll. of P. & S., Baltimore, 1896.....	1896	1904
Wheless, James Block, GP, Louisburg; Univ. of Md., 1935.....	1935	1938

GASTON COUNTY SOCIETY²⁷

President: Glenn, Dorothy Norman, GP, Gastonia; Woman's Med. Coll. of Pa., 1938.....	1938	1940
Secretary: Pugh, Charles Harrison (Hon.), GP, Gastonia; N. C. Med. Coll., 1910.....	1910	1910
Anders, McTyeire Gallant (Hon.), Pd, Gastonia; Maryland Med. Coll., 1901.....	1902	1902
Anthony, William Augustus, GP, Gastonia; Med. Coll. of Va., 1929.....	1929	1932
Belk, George W., Gastonia; Atlanta Sch. of Med., 1913.....	1918	1924
Blair, James Luther, ObG, Gastonia; Atlanta Med. Coll., 1915.....	1920	1921
Blair, J. Samuel, Ob, Gastonia; Med. Coll. of S. C., 1937.....	1938	1940
Bond, John P., S, Gastonia; Univ. of Ga., 1940.....	1947	1948
Boyce, O. D., ObG, Gastonia; Duke, 1933.....	1945	1946
Clinton, Roland Smith, Gastonia; Univ. of Md., 1914.....	1914	1920
Dimmette, J. A., GP, Gastonia; Kentucky Univ., 1905.....	1906	1947
Eckbert, William Fox, Cramerton; Duke, 1939.....	1941	1942
Freeman, Percy L., U, Gastonia; Univ. of Ga., 1943.....	1947	1947
Glenn, Charles Arthur, S, Gastonia; Med. Coll. of S. C., 1936.....	1936	1937
Glenn, Henry Franklin, Jr., GP, Gastonia; Emory, 1932.....	1932	1934
Glenn, Lucius Newton (Hon.), S, Gastonia; Univ. of Md., 1897.....	1897	1904
Grigg, Willard W., GP, Gastonia; Temple, 1937.....	1937	1948
Groves, Robert Burwell, GP, Lowell; Med. Coll. of Va., 1924.....	1924	1925
Herrin, Hermon Keith, Gastonia; Med. Coll. of Va., 1935.....	1935	1937
Houser, Forrest Melville, GP, Cherryville; Univ. of Pa., 1928.....	1929	1930
Howard, J. Cooper, GP, Cherryville; Temple, 1942.....	1942	1947
Jones, William McConnell, Pd, Gastonia; Med. Coll. of S. C., 1922.....	1927	1928
Lyday, Charles Emmett (Hon.), GP, Gastonia; Atlanta Sch. of Med., 1910.....	1910	1917
Matthews, William S., GP, Bessemer City; N. C. Med. Coll., 1910.....	1910	1926
McAdams, Charles Rupert (Hon.), GP, Belmont; N. C. Med. Coll., 1912.....	1912	1916
McChesney, William Wallace, Ob, Gastonia; Med. Coll. of Va., 1915.....	1926	1927
McConnell, Harvey Russell, S, Gastonia; Univ. of Md., 1924.....	1927	1930
McDowell, Roy Hendrix, PH, Belmont; Univ. of Md., 1929.....	1930	1931
Miller, Robert Carlyle, Gastonia; N. C. Med. Coll., 1909.....	1918	1919
Mitchell, Robert Hartwell, Gastonia; Med. Coll. of Va., 1936.....	1936	1938
Moore, Burmah Dixon, GP, Mt. Holly; Med. Coll. of Va., 1915.....	1915	1921
Moore, Robert Love, GP, Bessemer City; Med. Coll. of S. C., 1940.....	1946	1948
Norman, J. Standing, OALR, Gastonia; Coll. of P. & S., Baltimore, 1909.....	1911	1920
Parks, Walter Beatty, Ind, Gastonia; Univ. of Md., 1924.....	1924	1927
Pettit, H. S., R, Gastonia; Northwestern, 1939.....	1947	1947
Powell, Herman Sutton, GP, Gastonia; Univ. of Va., 1932.....	1932	1937
Prince, George, Pd, Gastonia; Duke, 1944.....	1947	1948
Quickel, John Cephas, OALR, Gastonia; Univ. of Pa., 1932.....	1932	1936
Reid, James William (Hon.), GP, Lowell; Jefferson, 1908.....	1908	1909
Rhyne, Robert Edgar (Hon.), PH, Gastonia; N. C. Med. Coll., 1907.....	1907	1908
Rice, Edmond Lee, S, Gastonia; Emory, 1931.....	1942	1943
Roberts, William McKinley, Or, Gastonia; Tufts, 1925.....	1928	1929
Robinson, James Lee, S, Gastonia; Univ. of Pa., 1932.....	1932	1936
Shepherd, Thomas Scott, GP, Dallas; Univ. of Edinburgh, 1900.....	1931	1948
Stroupe, Albertus Ula, Jr., Mount Holly; Med. Coll. of Va., 1931.....	1932	1938
Taylor, Benjamin Cicero, GP, Mount Holly; N. C. Med. Coll., 1910.....	1911	1923
Weathers, Bailey Graham, GP, Stanley; Med. Coll. of Va., 1929.....	1929	1941
Wilkins, Samuel A., Sr. (Hon.), GP, Dallas; Univ. of Ky., 1902.....	1903	1903

GATES COUNTY SOCIETY²⁸

Blanchard, Thomas W., GP, Hobbsville; Med. Coll. of Va., 1911.....	1911	1919
Cleveland, Parish Bowman, GP, Gatesville; Univ. of Louisville, 1943.....	1947	1947
Payne, John Abb, III, GP, Sunbury; Med. Coll. of Va., 1933.....	1935	1942

GRAHAM COUNTY SOCIETY²⁹

Davey, Joseph Aloysius, GP, Robbinsville; Long Island Coll. of Med.....	1948	1948
Gasque, Mac Roy, GP, Fontana Dam; Univ. of Va., 1944.....	1947	1947

GRANVILLE COUNTY SOCIETY³⁰

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Taylor, William Louis (Hon.), GP, Oxford; Univ. of Va., 1900.....	1901	1901
Secretary: Carrington, Samuel Macon, S, Oxford; Rush Med. Coll., 1931.....	1931	1934
Bradsher, James Sidney, I, Stovall; Univ. of Va., 1925.....	1925	1928
Clay, Earl Lewis, I, Oxford; Univ. of Ky., 1929.....	1929	1933
Daniel, L. Sam, GP, Oxford; Univ. of Md., 1940.....	1940	1946
Elliott, Julian Carr, S, Oxford; Univ. of Md., 1926.....	1926	1929
Morris, Joseph A. (Hon.), GP, Franklinton; Vanderbilt, 1890.....	1893	1899
Noblin, Roy Lee, GP, Oxford; Med. Coll. of Va., 1924.....	1924	1925
Norwood, Ballard, Jr., PH, Oxford; Med. Coll. of Va., 1937.....	1937	1940
Taylor, Rives Williams, GP, Oxford; Tulane, 1926.....	1926	1928
Thomas, William Nelson (Hon.), S, Oxford; Med. Coll. of Va., 1911.....	1911	1914
Thompson, Joseph W. (Hon.), GP, Creedmoor; Univ. of Ky., 1904.....	1907	1917
Winston, Patrick Henry, GP, Clarksville, Va.; Med. Coll. of Va., 1929.....	1929	1930

GREENE COUNTY SOCIETY³¹

Carroll, Fountain Williams, GP, Hookerton; Med. Coll. of Va., 1925.....	1926	1927
Dawson, William Earl, GP, Stantonsburg; Jefferson, 1920.....	1920	1922
Harner, James Henry, (Hon.), Pd, Snow Hill; Jefferson, 1905.....	1906	1906
Marlowe, William Anderson, GP, Walstonburg; Jefferson, 1919.....	1919	1921
Rasberry, Edwin Albert, Jr., GP, Snow Hill; Univ. of Pa., 1941.....	1941	1948
Walker, Robert Jeffreys, Jr., GP, Snow Hill; Med. Coll. of Va., 1932.....	1934	1935

GUILFORD COUNTY SOCIETY³²

President: Rhudy, Booker Ephram, R, Greensboro; Med. Coll. of Va., 1916.....	1926	1927
Secretary: Merritt, Jesse Fred, GP, Greensboro; Northwestern, 1936.....	1937	1938
Allgood, John W., I, Greensboro; Emory, 1938.....	1946	1946
Antonakos, Theodore, S, Greensboro; Univ. of Ga., 1935.....	1936	1946
Apple, Elbert Dwight, R, Greensboro; Washington Univ., 1929.....	1929	1936
Bain, Eugene A., PH, Greensboro; Univ. of Va., 1927.....	1927	1939
Banner, Charles Whitlock (Hon.), OALR, Greensboro; Univ. of Md., 1899.....	1899	1901
Barefoot, Sherwood W., Greensboro; Duke, 1938.....	1946	1947
Beall, Lawrence Lincoln, S, Greensboro; Med. Coll. of Va., 1931.....	1931	1946
Beaver, Charles L., S, Greensboro; Med. Coll. of Va., 1931.....	1931	1946
Beaver, William Olive, Greensboro; Northwestern Univ., 1943.....	1944	1946
Benton, Wayne Jefferson, GP, Greensboro; Syracuse Univ., 1934.....	1934	1936
Bertling, Marion Henry, ObG, Greensboro; Western Reserve, 1935.....	1948	1948
Bird, Ignacio, Greensboro; Yale, 1930.....	1946	1947
Bonner, Merle Dumont, T, Jamestown; Univ. of Md., 1930.....	1930	1934
Bonner, Octavius Blanchard, OALR, High Point; Univ. of Md., 1917.....	1920	1922
Brockmann, Harry Lyndon, S, High Point; Univ. of Pa., 1917.....	1917	1921
Brown, Frank Reid, I, Greensboro; Vanderbilt, 1938.....	1946	1946
Buie, Roderick Mark, PH, Greensboro; Jefferson, 1914.....	1914	1917
Burwell, John Cole, Jr., ObG, Greensboro; Duke, 1933.....	1936	1937
Cardwell, D. Willard, I, Greensboro; Med. Coll. of Va., 1932.....	1936	1937
Cater, Clinton Duncan, Ob, Greensboro; Emory, 1920.....	1923	1924
Clary, William Thomas, ObG, Greensboro; Univ. of Pa., 1928.....	1928	1934
Cole, Walter Francis (Hon.), Or, Greensboro; Johns Hopkins, 1909.....	1909	1910
Collings, Ruth Mary, GP, Greensboro; Univ. of Pa., 1923.....	1926	1927
Cook, Henry Lilly, Jr., OALR, Greensboro; Jefferson, 1918.....	1918	1920
Cook, Joseph Lindsay, GP, Greensboro; Univ. of Pa., 1925.....	1925	1928
Cozart, Samuel Rogers, GP, Greensboro; Med. Coll. of Va., 1923.....	1923	1925
Creech, Lemuel Underwood, GP, High Point; Tulane, 1939.....	1939	1940
Croom, A. B., GP, High Point; Med. Coll. of Va., 1940.....	1946	1946
Cross, Almon Rufus, ObG, High Point; Duke, 1938.....	1947	1947
Dalton, William B., GP, Greensboro; Univ. of Md., 1918.....	1939	1942
Davis, Joseph F. (Hon.), GP, Greensboro; Med. Coll. of Va., 1912.....	1912	1914
Davis, Julius Theodore, ObG, Greensboro; Tulane, 1941.....	1947	1948
Davis, Philip Bibb, S, High Point; Jefferson, 1926.....	1926	1929
Davis, Richard Boyd (Hon.), S, Greensboro; Med. Coll. of Va., 1915.....	1916	1917
Dees, Ralph Erastus (Hon.), GP, Greensboro; Univ. of Md., 1906.....	1908	1909
Dees, Rigdon Osmund (Hon.), GP, Greensboro; Univ. of Md., 1906.....	1907	1907
Doran, Martha V., GP, Greensboro; Woman's Med. Coll. Penn., 1943.....	1947	1948
Dunn, Richard Berry, ObG, Greensboro; McGill Univ., 1933.....	1936	1937
Durham, Carey Winston, GP, Greensboro; George Washington Univ., 1927.....	1927	1930
Dyer, John Wesley, GP, High Point; Univ. of Louisville, 1916.....	1921	1921
Edwards, Vertie Edward (Hon.), GP, Greensboro; Univ. of Md., 1913.....	1913	1913
Ellis, Elizabeth Lange, GP, Greensboro; Univ. of Mich., 1928.....	1942	1944
Ellis, Ralph V., A&I, Greensboro; Nat. Univ. Arts & Sc., 1916; Univ. of Minn., 1934.....	1942	1944
Farmer, William Dempsey, OALR, Greensboro; Duke, 1934.....	1939	1939

ROSTER OF FELLOWS

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<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Flagge, Philip Wesley (Hon.), I, Fairhope, Ala.; Washington Univ., 1902	1905	1906
Flythe, William Henry, I, High Point; Vanderbilt, 1933	1933	1937
Fortune, Alexander Fletcher (Hon.), GP, Greensboro; Univ. Coll. of Med., Richmond, 1900	1900	1904
Fortune, Benjamin Fletcher, Greensboro; Jefferson, 1941	1941	1947
Fox, Norman Albright, GP, Greensboro; Univ. of Pa., 1924	1924	1926
Freedman, Arthur, I, Greensboro; Vanderbilt, 1939	1946	1946
Garrard, Robert Lemley, NP, Greensboro; Harvard, 1932	1940	1941
Geddie, Kenneth Baxter, Pd, High Point; Jefferson, 1921	1921	1923
Gilmore, Clyde Manly, I, Greensboro; Med. Coll. of Va., 1925	1925	1926
†Gove, Anna M. (Hon.), GP, Greensboro; Woman's Med. Coll. of N. Y., 1892	1894	1896
Gray, Cyrus Leighton, R, High Point; Duke, 1937	1937	1940
Grayson, Charles Shober (Hon.), Ob, High Point; George Washington Univ., 1906	1907	1908
Groome, James Gordon, GP, High Point; Univ. of Cincinnati, 1924	1924	1925
Harden, Robert Norman, S, Greensboro; Univ. of Pa., 1922	1922	1924
Harder, Frank Kirby, PH, Greensboro; Univ. of Cinn., 1930	1942	1943
Harrill, Henry Clay, U, Greensboro; Johns Hopkins, 1933	1933	1940
Harrison, Edmund (Hon.), GP, Greensboro; Univ. Coll. of Med., Richmond, 1895	1900	1900
Harvey, Wallace Watson, GP, Greensboro; Emory, 1920	1922	1923
Henson, Thomas Albert, Greensboro; Temple, 1937	1937	1947
Herring, Robert Alexander, PH, High Point; Tulane, 1905	1923	1924
Holt, Duncan Waldo, I, Greensboro; Jefferson, 1918	1918	1921
Jackson, Walter Leo (Hon.), S, High Point; N. C. Med. Coll., 1911	1911	1913
Keith, Marion Yates, Pd, Greensboro; Univ. of Md., 1923	1923	1927
Kesler, Robert Cicero, OALR, Greensboro; Tulane, 1928	1928	1930
Lackey, Marvin Alphonso, OALR, High Point; N. C. Med. Coll., 1917	1923	1924
Lake, Ralph Callihan, S, Greensboro; Univ. of Louisville, 1931	1947	1948
Leath, MacLean Bacon, OALR, High Point; Jefferson, 1933	1933	1937
LeBauer, Maurice Leon, S, Greensboro; Univ. of Va., 1929	1930	1932
LeBauer, Sidney Ferring, I, Greensboro; Univ. of Va., 1929	1930	1932
Lennon, Hershel Clanton, Path, Greensboro; Univ. of Pa., 1931	1931	1941
Lewis, Clifford Whitfield, Greensboro; Med. Coll. of Va., 1930	1930	1931
Lewis, Walter Glenn, GP, Gibsonville; Med. Coll. of Va., 1938	1938	1940
Little, Howard L., GP, Gibsonville; Washington Univ., 1934	1934	1937
Lovelace, Daniel D., A, Oakland, California; Tufts, 1934	1934	1947
Lupton, Carroll Crescent, S, Greensboro; Temple, 1931	1931	1934
Lyday, Russell Osborne, S, Greensboro; Univ. of Pa., 1920	1920	1927
Lyon, Brockton Reynolds, S, Greensboro; Columbia, 1915	1920	1920
Maness, Archibald Kelly, GP, Greensboro; Jefferson, 1928	1928	1929
Mann, Ira Thurman (Hon.), GP, High Point; Jefferson, 1912	1912	1915
Mathews, Robert William, I, Greensboro; Emory, 1932	1937	1938
McAlister, Jean Colvin, Pd, Greensboro; Univ. of Pa., 1933	1936	1937
McAnally, William Jefferson (Hon.), GP, High Point; Baltimore Med. Coll., 1897	1896	1899
McCain, Walkup Kennard, GP, High Point; Jefferson, 1929	1929	1930
McCain, William R. (Hon.), GP, High Point; Univ. of Md., 1897	1898	1898
McGee, Julian Murrill, GP, Greensboro; Univ. of Pa., 1925	1927	1928
Miles, May Sallie (Hon.), GP, Greensboro; Laura Memorial Woman's Med. Coll., Cincinnati, 1898	1904	1905
Mills, Charles Rose, Oph, Greensboro; Univ. of Pittsburgh, 1936	1938	1938
Norment, William Blount, S, Greensboro; Jefferson, 1922	1922	1932
Ogburn, Herbert Hammond (Hon.), S, Greensboro; Johns Hopkins, 1913	1913	1914
Ownbey, Arthur Dennis, GP, Greensboro; Med. Coll. of Va., 1920	1925	1927
Parker, Herman Richard, GP, Greensboro; Syracuse Univ., 1923	1924	1925
Parks, Williams Craig, GP, High Point; Med. Coll. of S. C., 1938	1938	1940
Patterson, Fred Marion, U, Greensboro; Univ. of Pa., 1924	1924	1928
Perry, Glenn Grey, S, High Point; Med. Coll. of Va., 1933	1933	1934
Perry, Robert E., Greensboro; Univ. of Pa., 1921	1921	1925
Prefontaine, J. Edouard, OALR, Greensboro; Laval Univ. of Quebec, 1927	1931	1934
Ravenel, Samuel Fitzsimons, Pd, Greensboro; Johns Hopkins, 1923	1923	1926
Reavis, Charles William, Greensboro; Med. Coll. of Va., 1936	1936	
Register, John Francis, Or, Greensboro; S. C. Med. Coll., 1931	1936	1937
Reitzel, Claude Everett (Hon.), GP, High Point; Coll. of P. & S., Atlanta, 1902	1902	1902
Ridge, Clyde Franklin, High Point; Med. Coll. of Va., 1922	1922	1946
Riner, C. R., GP, Greensboro; Univ. of the South, 1901	1944	1946
Rogers, Max Pritchard, S, High Point; Duke, 1942	1944	1947
Rubin, Adrian Stevens, Pd, Greensboro; N. Y. Med. Coll., 1937	1937	1941
Saunders, Stanley Stewart, Pd, High Point; Harvard, 1924	1926	1927
Schweizer, Donald Conrad, ObG, Greensboro; Med. Coll. of Va., 1943	1947	1948
Sharp, Oliver Ledbetter, I, Greensboro; Jefferson, 1922	1924	1925
Shelburne, Palmer Augustine, I, Greensboro; Univ. of Va., 1927	1928	1928
Shepard, Karl, High Point; Harvard, 1935	1939	1940
Shields, William Ernest, GP, Stokesdale; Bowman Gray Sch. of Med., 1944	1944	1947

† Deceased.

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Shohan, Joseph, R., Greensboro; Coll. of P. & S., Baltimore, 1901.....	1914	1923
Sikes, Charles Henry, GP, Greensboro; Jefferson, 1931.....	1933	1934
Siske, Grady Cornell, GP, Pleasant Garden; Chicago Med. Coll., 1936.....	1937	1938
Slate, John William, GP, High Point; Univ. Coll. of Med., Richmond, 1900.....	1899	1925
Slate, Joseph Esmond, GP, High Point; Tulane, 1934.....	1934	1937
Slate, Marvin Longworth, GP, High Point; Univ. of Md., 1931.....	1931	1934
Smith, Alick Thomas (Hon.), GP, Greensboro; Med. Coll. of Va., 1908.....	1910	1913
Smith, Opie Norris, I, Greensboro; Univ. of Pa., 1933.....	1938	1938
Smith, Roy Meadows, Pd, Greensboro; Univ. of Pa., 1934.....	1934	1937
Sparrow, Harry Ward, Greensboro; Northwestern, 1943.....	1944	1947
Stanton, T. M. (Hon.), High Point; Med. Coll. of Va., 1916.....	1916	1917
Starr, Henry Frank (Hon.), Ins, Greensboro; Jefferson, 1916.....	1916	1917
Stelling, Richard Nunnally, GP, Greensboro; Univ. of Ga., 1930.....	1933	1934
Stevens, Joseph Blackburn, N&I, Greensboro; Duke, 1935.....	1940	1940
Stirewalt, Neale Summers, GP, High Point; Univ. of Md., 1909.....	1915	1927
Strickland, Horace Gilmore, OALR, Greensboro; Univ. of Md., 1930.....	1930	1937
Sumner, Emmett Ashworth, S, High Point; Baylor Univ., 1925.....	1926	1927
Tankersley, James William (Hon.), S, Greensboro; Jefferson, 1906.....	1906	1906
Tannenbaum, Abraham Jack, I, Greensboro; Duke, 1935.....	1937	1940
Taylor, Frederick Raymond (Hon.), I, High Point; Univ. of Pa., 1913.....	1913	1915
Taylor, James Nathaniel (Hon.), I, Greensboro; Med. Coll. of Va., 1901.....	1902	1905
Taylor, Shahane Richardson, OALR, Greensboro; Univ. of Pa., 1921.....	1921	1924
Taylor, Wesley Ewing, PN, Greensboro; Univ. of Mich., 1899.....	1925	1926
Thomas, Julius Graham, GP, Greensboro; Med. Coll. of Va., 1915.....	1915	1920
Thompson, Claude Durant (Hon.), GP, High Point; Univ. of Tenn., 1901.....	1901	1904
Tice, Walter Thomas, GP, High Point; Jefferson, 1927.....	1927	1929
Troxler, Eulyss Robert, Or, Greensboro; Duke, 1938.....	1947	1948
Tyson, Thomas David, Jr., Pd, High Point; Johns Hopkins, 1933.....	1933	1938
Tyson, Woodrow Wilson, I, High Point; Med. Coll. of Va., 1935.....	1935	1938
Vaughan, Edwin Warner, A&I, Greensboro; Univ. of Va., 1937.....	1940	1940
Warwick, Hight Claudius, Anes, Greensboro; Med. Coll. of Va., 1934.....	1934	1936
Watson, Hugh Alfred, GP, Greensboro; Med. Coll. of Va., 1930.....	1930	1941
Whittington, Claude Thomas, S, Greensboro; Univ. of Md., 1927.....	1927	1929
Wilkinson, Louis Lee, GP, High Point; Univ. of Va., 1926.....	1941	1941
Williams, John Drewey (Hon.), GP, Guilford Station; Vanderbilt, 1898.....	1898	1898
Williams, John Dudley, Jr., GP, Greensboro; Temple, 1930.....	1931	1935
Wolfe, Hugh Claibourne, OALR, Greensboro; Med. Coll. of Va., 1917.....	1917	1920
Womble, William Hugh, Jr., Greensboro; Med. Coll. of Va., 1943.....	1944	1947
Wood, George Thomas, S, High Point; Jefferson, 1928.....	1928	1935
Wood, William Reed, Greensboro; Univ. of Louisville, 1938.....	1938	1947
Woodruff, Fred Gwyn, GP, High Point; Med. Coll. of Va., 1917.....	1917	1919
York, Alexander Arthur (Hon.), GP, High Point; Chattanooga Med. Coll., 1907.....	1907	1908

HALIFAX COUNTY SOCIETY³³

President: Kroncke, Fred George, I, Roanoke Rapids; Univ. of Wisconsin, 1937.....	1941	1942
Secretary: Broun, Matthew Singleton, OALR, Roanoke Rapids; Columbia, 1919.....	1922	1922
Beckwith, Robert Payne (Hon.), Pd, Roanoke Rapids; Univ. of Pa., 1911.....	1913	1916
Blowe, Ralph Boyd, GP, Weldon; Med. Coll. of Va., 1938.....	1938	1941
Covington, John Malloy Clayton, OALR, Roanoke Rapids; Univ. of Va., 1929.....	1930	1933
Cutchin, Joseph Henry, Jr., GP, Roanoke Rapids; Duke, 1942.....	1943	1943
Hall, William Dewey, P, Roanoke Rapids; Med. Coll. of S. C., 1932.....	1933	1934
Jarman, Fontaine Graham (Hon.), S, Roanoke Rapids; Univ. Coll. of Med., Richmond, 1911.....	1914	1916
Joyner, Powell Winfred, GP, Enfield; Syracuse Univ., 1932.....	1932	1935
Maddrey, Milner Crocker, S, Roanoke Rapids; Jefferson, 1931.....	1931	1937
Murray, E. Cotter, GP, Roanoke Rapids; Univ. of Oklahoma, 1930.....	1947	1948
Neville, Cecil Howell, GP, Scotland Neck; Tulane, 1927.....	1927	1928
Palmer, Horace, GP, Littleton; Atlanta Sch. of Med., 1912.....	1912	1920
Robertson, Carroll Bracey, Jackson; Med. Coll. of Va., 1933.....	1934	1938
Smith, Edward Barney, GP, Enfield; Univ. of Va., 1939.....	1940	1940
Smith, Oscar Fennell (Hon.), GP, Scotland Neck; Univ. Coll. of Med., Richmond, 1899.....	1899	1905
Suiter, Wester Ghio, GP, Weldon; Med. Coll. of Va., 1917.....	1917	1920
Taylor, Thomas Jefferson, Roanoke Rapids; Jefferson, 1934.....	1934	1937
Thigpen, Harry Gordon, GP, Scotland Neck; Jefferson, 1917.....	1917	1920
Weathers, Bahnson, S, Roanoke Rapids; Washington Univ., 1917.....	1921	1922
White, Francis Willard Moody, GP, Halifax; Med. Coll. of Va., 1924.....	1924	1924
Woodburn, C. H., PH, Littleton; Med. Coll. of Va., 1940.....	1940	1944
Young, Robert Foster, PH, Halifax; Emory, 1937.....	1939	1940

HARNETT COUNTY SOCIETY³⁴

President: Fleming, Fred Henry, GP, Coats; Tulane, 1930.....	1930	1933
Secretary: Johnson, Gale D., GP, Dunn; Jefferson, 1944.....	1944	1947
Adair, William Edward, GP, Erwin; Temple, 1938.....	1938	1941

ROSTER OF FELLOWS

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Name and Address

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Byrd, Charles W., GP, Dunn; Temple, 1940.....	1940	1947
Corbett, Clarence Lee, GP, Dunn; Emory, 1927.....	1927	1928
Doffermyre, Luther Randolph, GP, Dunn; Temple, 1938.....	1938	1939
Eldridge, Harvey A., GP, Dunn; Med. Coll. of Va., 1934.....	1934	1936
Griffin, Leslie W., GP, Erwin; Jefferson, 1941.....	1941	1946
Holt, William Preston (Hon.), S, Erwin; Jefferson, 1895.....	1895	1901
Hunter, William Blair, PH, Lillington; Univ. of Pa., 1911.....	1913	1920
Johnson, John Ralph, GP, Dunn; Med. Coll. of Va., 1932.....	1932	1941
Martin, John Floyd (Hon.), OALR, Dunn; N. C. Med. Coll., 1905.....	1905	1908
Northup, Edwin Charles, GP, Lillington; Bowman Gray Sch. of Med., 1946.....	1946	1948
Parker, Paul Godwin (Hon.), GP, Erwin; Med. Coll. of Va., 1916.....	1916	1917
Poole, Marvin Bailey, Dunn; Med. Coll. of Va., 1938.....	1938	1941
Stanfield, William Wesley, S, Dunn; Med. Coll. of Va., 1932.....	1932	1940
Williford, John Kenneth, GP, Lillington; Bowman Gray Sch. of Med., 1946.....	1946	1948
Wilson, Stephen Glenn, Angier; Med. Coll. of Va., 1930.....	1930	1932
Wyatt, Arthur Thomas, Raleigh; Jefferson, 1919.....	1919	1927

HAYWOOD COUNTY SOCIETY³⁵

President: Owen, W. Boyd, GP, Waynesville; Univ. of Pa., 1942.....	1942	1946
Secretary: Matthews, Hugh Archie, Canton; Duke, 1943.....	1947	1947
Duckett, Virgil Howard, GP, Canton; Univ. of Pa., 1930.....	1930	1932
Gibbons, George W., GP, Canton; Univ. of Arkansas, 1945.....	1947	1947
† Kirkpatrick, William L. (Hon.), GP, Waynesville; Vanderbilt, 1894.....	1894	1895
Lancaster, Newton Paris, GP, Waynesville; Med. Coll. of Va., 1931.....	1932	1933
McCracken, John Rufus (Hon.), OALR, Waynesville; N. C. Med. Coll., 1902.....	1902	1903
McLain, Crawford E., Ind., Canton; Emory, 1926.....	1936	1948
Michal, Mary Barrows Harris, Pd, Waynesville; Yale, 1928.....	1938	1939
Moore, Roy Hardin, GP, Canton; Washington Univ., 1931.....	1931	1934
Owen, Charles Fletcher, Jr., S, Canton; Univ. of Pa., 1937.....	1937	1940
Owen, Margaret Lineberry, G, Canton; Univ. of Pa., 1932.....	1932	1936
Owen, Robert Harrison, S, Canton; Univ. of Pa., 1931.....	1931	1935
Pate, James Frank, GP, Canton; Med. Coll. of S. C., 1927.....	1927	1929
Reeves, Jerome Lyda, GP, Canton; Vanderbilt, 1913.....	1913	1917
Roberson, Robert Stuart, GP, Waynesville; Med. Coll. of Va., 1930.....	1930	1932
Russell, Jesse Milton (Hon.), Pd, Canton; Univ. of Nashville, 1911.....	1911	1912
Stretchor, Robert Hatfield, S, Waynesville; Rush Med. Coll., 1927.....	1927	1930
Stringfield, Thomas, Sr. (Hon.), Anes, Waynesville; Vanderbilt Univ., 1898.....	1898	1899
Stringfield, Thomas, GP, Waynesville; Univ. of S. C., 1934.....	1934	1937
Westmoreland, Joseph Robert, GP, Canton; Washington Univ., 1932.....	1932	1934

HENDERSON COUNTY SOCIETY³⁶

President: Fortescue, William Nicholas, GP, Hendersonville; Duke, 1934.....	1934	1936
Secretary: Bond, George F., GP, Bat Cave; McGill, 1945.....	1946	1946
Bailey, Joseph P., Hendersonville; Med. Coll. of S. C., 1943.....	1947	1948
Brackett, William Ernest, OALR, Hendersonville; Jefferson, 1915.....	1915	1924
Brown, James Stevens, Sr. (Hon.), GP, Hendersonville; Northwestern, 1893.....	1894	1895
Corpening, Flave Hart, GP, Horse Shoe; Jefferson, 1928.....	1928	1942
Crow, M. B., R, Hendersonville; Univ. of Arkansas, 1934.....	1946	1947
Dixon, Guy E. (Hon.), PN, Hendersonville; St. Louis Coll. of P. & S., 1903.....	1903	1903
Fautleroy, Joseph Whittlesey, Ob, Zirconia; Columbia, 1896.....	1900	1929
King, Duncan Ingraham Campbell, Pd, Hendersonville; Med. Coll. of S. C., 1935.....	1936	1937
Kirk, William Redin (Hon.), I, Hendersonville; Central Univ. of Ky., 1891.....	1901	1903
Major, R. T., ALR, Hendersonville; Johns Hopkins, 1916.....	1944	1944
McDonald, Lester Bowman, GP, Hendersonville; Jefferson, 1934.....	1934	1935
Pay, Wilson Cyrus, GP&S, Hendersonville; Univ. of Louisville, 1894.....	1938	1940
Porter, Richard A., Hendersonville; Western Reserve, 1943.....	1947	1948
Russell, Lloyd Pacemas, GP, Fletcher; Univ. of Nashville, 1901.....	1902	1903
Salley, Edward McQueen (Hon.), ObG, Hendersonville; Univ. of Md., 1905.....	1905	1908
Sample, Robert Cannon, GP, Hendersonville; Univ. of Pa., 1915.....	1915	1920
Souther, W. E., GP, Hendersonville; Univ. of Tenn., 1943.....	1946	1947
Sumner, Thomas W., GP, Hendersonville; Jefferson, 1910.....	1910	1911
Trotter, Fred Oscar, S, Hendersonville; Univ. of Minnesota, 1933.....	1934	1934
Ulloth, Gustave, GP, Hendersonville; Coll. of Med. Evangelists, 1932.....	1939	1941

HERTFORD COUNTY SOCIETY³⁷

Matheson, Joseph Gaddy, OALR, Ahoskie; Jefferson, 1929.....	1929	1931
Cooke, Quinton Edwin, GP, Murfreesboro; Med. Coll. of Va., 1937.....	1937	1939
Futrell, Lokie Melton, GP, Murfreesboro; Med. Coll. of Va., 1914.....	1914	1918
Mitchell, Paul Hayne (Hon.), Ahoskie; Univ. Coll. of Med., Richmond, 1907.....	1907	1908
Ruffin, Jennings Bryan, Ahoskie; Med. Coll. of Va., 1937.....	1937	1942
Walker, Louis Kyle, GP, Ahoskie; Univ. of Md., 1911.....	1911	1917

† Deceased.

HOKE COUNTY SOCIETY³⁸

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Hiatt, Joseph S., Jr., T, McCain; Duke, 1939.....	1941	1945
Secretary: Johnson, L. Meredith, T, McCain; Med. Coll. of Va., 1939.....	1939	1944
Brown, George W. (Hon.), GP, Raeford; Ky. Sch. of Med., 1898.....	1900	1900
Byrd, William Carey, T, McCain; Jefferson, 1923.....	1925	1937
Matheson, Robert Arthur, GP, Raeford; Jefferson, 1926.....	1926	1928
Murray, Robert Lebby, GP, Raeford; Univ. of Md., 1923.....	1923	1925
O'Eriant, Albert Lee, GP, Raeford; Jefferson, 1920.....	1920	1922
Oliver, R. K., T, McCain; Univ. of Tenn., 1942.....	1946	1947
Willis, Henry Stuart, T, McCain; Johns Hopkins, 1919.....	1947	1947

HYDE COUNTY SOCIETY

IREDELL-ALEXANDER COUNTIES SOCIETY³⁹

President: Pressly, James Lowry, GP, Statesville; Jefferson, 1925.....	1925	1928
Secretary: Ward, Ernest, PH, Statesville; Baylor Univ., 1918.....	1947	1947
Bell, Andrew E. (Hon.), GP, Mooresville; Univ. of Md., 1897.....	1897	1904
Bittinger, Charles Lewis, Mooresville; Univ. of Va., 1935.....	1936	1937
Brandon, William R., OALR, Statesville; Univ. of Md., 1914.....	1925	1948
Clayton, Milton Burns, OALR, Washington, D. C.; Univ. of Louisville, 1917.....	1933	1935
Crouch, Thomas Dalton (Hon.), GP, Stony Point; N. C. Med. Coll., 1909.....	1909	1915
Davidson, Alan, OALR, Statesville; Univ. of Vermont, 1943.....	1948	1948
Davis, James Wagner (Hon.), S, Statesville; Univ. of Pa., 1913.....	1913	1915
Deaton, Paul M., GP, Statesville; Univ. of Pa., 1939.....	1939	1948
Gibson, Lauren Osborne (Hon.), ObG, Statesville; N. C. Med. Coll., 1913.....	1913	1915
Goode, Thomas Vance (Hon.), S, Statesville; Univ. Coll. of Med., Richmond, 1912.....	1912	1916
Holbrook, Joseph Samuel, GP, Statesville; Univ. of Pa., 1932.....	1932	1934
Little, Lonnie Marcus, GP, Statesville; Jefferson, 1925.....	1925	1927
McElwee, Ross Simonton (Hon.), R, Statesville; Univ. of Md., 1909.....	1909	1910
McLelland, William Davies, GP, Mooresville; Jefferson, 1913.....	1913	1917
Meade, Forest C., S, Statesville; Univ. of Md., 1940.....	1947	1947
Morrison, James Rudy, GP, Statesville; Georgetown, 1934.....	1935	1936
Myers, Dwight Loftin, GP, Harmony; Tulane, 1925.....	1928	1929
Painter, William Watson, S, Mooresville; Med. Coll. of S. C., 1937.....	1943	1945
Pressly, David, I&Pd, Statesville; Jefferson, 1942.....	1942	1946
Rhyne, Sam Albertus, GP, Statesville; N. C. Med. Coll., 1915.....	1915	1920
Robertson, James Mebane, GP, Harmony; Temple, 1932.....	1932	1934
Shaw, Lloyd Roosevelt, GP, Statesville; Med. Coll. of Va., 1930.....	1930	1931
Skeen, Leo Brown, GP, Mooresville; Univ. of Md., 1935.....	1935	1936
Sloan, Allen Barry, GP, Mooresville; Med. Coll. of Va., 1924.....	1924	1926
Stegall, John T., GP, Statesville; Univ. of Md., 1943.....	1947	1948
Tatum, Roy Carroll, Taylorsville; Jefferson, 1919.....	1919	1920
Taylor, George Winston (Hon.), S, Mooresville; N. C. Med. Coll., 1906.....	1906	1907
Thurston, Asa (Hon.), GP, Taylorsville; Univ. of Md., 1909.....	1909	1914
Wellborn, William R., GP, Elkin; Tulane, 1942.....	1946	1946
Wrenn, Creighton, GP, Mooresville; Tulane, 1935.....	1936	1938

JACKSON-SWAIN COUNTIES SOCIETY⁴⁰

President: Nichols, Alvan Alexander (Hon.), GP, Sylva; Univ. of Nashville, 1898.....	1904	1904
Secretary: Kirchberg, Roy William, Sylva; N. C. Med. Coll., 1916.....	1916	1936
Bacon, Harold Lyle, Bryson City; Northwestern Univ., 1934.....	1935	1936
Bennett, P. R., Bryson City; Univ. of Md., 1916.....	1916	1917
Hooper, Delos D. (Hon.), Sylva; Med. Coll. of Va., 1905.....	1905	1905
Nichols, Asbury S. (Hon.), GP, Sylva; Tenn. Med. Coll., 1906.....	1907	1913
Slagle, T. D., GP&S, Sylva; Cornell, 1932.....	1945	1946
Weiters, John Christopher, Bryson City; Med. Coll. of S. C., 1912.....	1933	1934
Wilkes, Grover W., Sylva; N. C. Med. Coll., 1916.....	1916	1920

JOHNSTON COUNTY SOCIETY⁴¹

President: Upchurch, Thaddeus Gilbert, GP, Smithfield; Duke, 1932.....	1932	1935
Secretary: Hunter, Shelton B., Jr., GP, Kenly; Med. Coll. of Va., 1940.....	1941	1946
Aycock, Francis Marion, GP, Princeton; Med. Coll. of Va., 1921.....	1921	1926
Booker, Edward Nelson, GP, Selma; Univ. of Va., 1925.....	1925	1930
Brooks, Harry Eskridge, GP, Clayton; Med. Coll. of Va., 1917.....	1917	1923
Cliff, Benjamin Franklin, GP, Benson; George Washington Univ., 1908.....	1909	1915
Creech, Bennett, GP, Selma; Univ. of Va., 1944.....	1946	1947
Davidian, Vartan A., S, Smithfield; Univ. of Kiev, Russia, 1919.....	1929	1930
Duncan, Stacy Allen, GP, Benson; Tulane, 1924.....	1924	1925
Earp, Raymond Elmore, S, Selma; Univ. of Pa., 1928.....	1928	1941

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Fitzgerald, John Herbert, OALR, Smithfield; Jefferson, 1920.....	1920	1922
Grady, Edward Stephen, Ob, Smithfield; Tulane, 1937.....	1937	1942
Grady, James C. (Hon.), GP, Kenly; Baltimore Univ. Sch. of Med., 1887.....	1887	1890
Hinnant, Milford (Hon.), GP, Micro; Univ. of Md., 1912.....	1912	1913
Jackson, Marshall Vaden, GP, Princeton; Univ. of Md., 1930.....	1930	1937
Jones, Donnie H., Jr., GP, Princeton; Univ. of Va., 1942.....	1942	1947
Lassiter, Will Hardee, Jr., GP, Selma; Med. Coll. of Va., 1938.....	1938	1939
McLemore, George A. (Hon.), GP, Smithfield; Univ. of N. C., 1906.....	1906	1906
Rose, Abraham Hewitt (Hon.), GP, Smithfield; Jefferson, 1906.....	1906	1906
Royster, J. D., GP, Benson; Univ. of Md., 1936.....	1936	1942
Sox, Carl Caughman, GP, Kenly; George Washington Univ., 1932.....	1936	1936
Stanley, John Haywood (Hon.), GP, Four Oaks; Univ. of N. C., 1904.....	1904	1906
Wharton, Charles Watson, GP, Smithfield; La. State Univ., 1937.....	1937	1937
Wilson, William Gilliam, GP, Smithfield; Jefferson, 1921.....	1921	1924
Woodard, Barney Lelon, GP, Kenly; Univ. of Md., 1933.....	1933	1935
Yates, Percy Fenton, GP, Clayton; Emory, 1935.....	1935	1938

JONES COUNTY SOCIETY

LEE COUNTY SOCIETY⁴²

President: McLeod, Mary Margaret, Pd, Sanford; Vanderbilt, 1935.....	1935	1946
Secretary: Blue, Waylon, GP, Jonesboro; Med. Coll. of Va., 1925.....	1925	1926
Byerly, James Hampton, GP, Sanford; Northwestern Univ., 1935.....	1936	1938
Dotterer, Elizabeth James, GP, Sanford; Univ. of Fa., 1939.....	1939	1944
Dotterer, John E., GP, Sanford; Univ. of Va., 1938.....	1946	1946
Foster, John Franklin, GP, Sanford; N. C. Med. Coll., 1916.....	1916	1919
Gunter, Van Wyche, GP, Jonesboro; Med. Coll. of Va., 1946.....	1947	1948
Hartness, William Rufus, GP, Jonesboro; Univ. of Louisville, 1938.....	1938	1939
James, Arthur Augustus, Jr., GP, Sanford; Univ. of Pa., 1932.....	1932	1936
Knight, Floyd LaFayette, S, Sanford; Univ. of Va., 1924.....	1925	1926
Lutterloh, Isaac Hayden, Jr., GP&S, Sanford; Jefferson, 1921.....	1921	1924
Melver, Lynn (Hon.), GP, Sanford; Ky. Univ., 1901.....	1902	1902
Oelrich, August M., S, Sanford; Univ. of Iowa, 1939.....	1947	1948
Patterson, Joseph Halford, GP, Broadway; Med. Coll. of Va., 1932.....	1932	1934
Sowers, Roy Gerodd, OALR, Sanford; Univ. of Md., 1923.....	1923	1924
Thomas, B. D., GP, Jonesboro; Med. Coll. of S. C., 1944.....	1946	1947

LENOIR COUNTY SOCIETY⁴³

President: West, Bryan Clinton, Pd, Kinston; Univ. of Pa., 1924.....	1924	1926
Secretary: Ballard, Claude H., GP, Kinston; Temple, 1941.....	1941	1946
Boney, Elwood Rantz, I, Kinston; Univ. of Pa., 1926.....	1926	1928
Boyette, Dan P., Pd, Kinston; Univ. of Va., 1943.....	1943	1948
Bundy, James B., GP, LaGrange; Northwestern Med. School, 1944.....	1946	1946
Cranz, Oscar William, S, Kinston; Med. Coll. of Va., 1931.....	1934	1936
Davis, Rachel Darden, Ob, Kinston; Woman's Med. Coll. of Pa., 1932.....	1933	1934
Fuller, Henry Fleming, ObG, Kinston; Univ. of Pa., 1935.....	1936	1939
Hardy, Ira May (Hon.), ALR, Kinston; Med. Coll. of Va., 1901.....	1902	1902
Jennings, Edward C., OALR, Washington, D. C.; Temple, 1933.....	1934	1936
Jones, Ransom, J., PH, Kinston; Emory, 1932.....	1946	1947
Keiter, William Eugene, Pd, Kinston; Washington Univ., 1931.....	1935	1935
Lee, Mike, U, Kinston; Tulane, 1926.....	1926	1927
Lee, Thomas Leslie, ObG, Kinston; Med. Coll. of Va., 1926.....	1926	1927
Meyers, Paul T., R, Kinston; Univ. of Iowa, 1930.....	1946	1946
Moseley, Zebulon Vance (Hon.), PH, Kinston; Univ. Coll. of Med., Richmond, 1913.....	1913	1914
Offutt, Vernon Delmas, I, Kinston; Med. Coll. of Va., 1933.....	1935	1940
Parrott, G. Fountain, I, Kinston; Temple, 1943.....	1944	1946
Parrott, John Arendall, Ob, Kinston; Temple, 1940.....	1940	1942
†Parrott, William Thomas (Hon.), GP, Kinston; Tulane, 1899.....	1899	1901
Peele, James Clarendon, Kinston; Temple, 1936.....	1937	1942
Pritchard, George Littleton, GP, Black Mountain; Univ. Coll. of Med., Richmond, 1913.....	1913	1926
Ruffin, David Winston, GP, Pink Hill; Med. Coll. of Va., 1932.....	1932	1932
Sabiston, Frank, OALR, Kinston; Univ. of Md., 1918.....	1919	1926
Temple, Rufus Henry, I, Kinston; Univ. of Pa., 1936.....	1936	1938
Turrentine, Kilby Pairo, I, Kinston; Rush Med. Coll., 1931.....	1932	1933
Tyndall, Robert Glenn, S, Kinston; Univ. of Pa., 1928.....	1928	1931
West, Clifton Forrest, I, Kinston; Univ. of Pa., 1917.....	1917	1920
Whitaker, Paul Frederick, I, Kinston; Med. Coll. of Va., 1922.....	1922	1924
Williams, Lynwood Earl, I, Kinston; Univ. of Pa., 1940.....	1940	1943
Wooten, Cecil C., GP, Kinston; Harvard, 1945.....	1945	1948
Wooten, Floyd Pugh, S, Kinston; Jefferson, 1920.....	1920	1923

† Deceased.

LINCOLN COUNTY SOCIETY⁴⁴

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Griggs, Boyce Powell, GP, Lincolnton; Bowman Gray Sch. of Medicine, 1943	1943	1946
Secretary: Wilson, Samuel Allen, Lincolnton; Emory, 1937	1937	1940
Bandy, William Gaither (Hon.), GP, Lincolnton; Vanderbilt, 1908	1912	1914
Cornwell, Abner Milton, S, Lincolnton; George Washington Univ., 1927	1927	1928
Costner, Walter Vance, Pd, Lincolnton; Jefferson, 1924	1925	1927
Crowell, Lester Avant, Sr. (Hon.), S, Lincolnton; Baltimore Med. Coll., 1892	1892	1898
Crowell, Lester Avant, Jr., I, Lincolnton; Tulane, 1930	1930	1930
Edwards, Forest D., Ob, Lawndale; Atlanta Med. Coll., 1914	1916	1919
Fitzgerald, John Hill, Jr., GP, Lincolnton; Univ. of Va., 1938	1940	1941
Gamble, John R., Jr., GP, Lincolnton; Univ. of Md.	1946	1946
Hoover, Charles Henry (Hon.), GP, Crouse; Baltimore Med. Coll., 1903	1903	1903
Jacocks, W. P. (Hon.), PH, Raleigh; Univ. of Pa., 1911	1911	1913
Morton, L. Thomas, OALR, Lincolnton; Univ. of Pa., 1927	1927	1947
Page, William Gordon, S & GP, Lincolnton; Jefferson, 1939	1946	1946
Reinhardt, James Franklin, I, Lincolnton; Duke, 1941	1946	1946

MACON-CLAY COUNTIES SOCIETY⁴⁵

Angel, Edgar, S, Franklin; Jefferson, 1928	1932	1932
Angel, Furman, S, Franklin; Jefferson, 1918	1923	1924
Fisher, Ernest W., GP, Franklin; Medical Coll. of S. C., 1941	1941	1947
Jacocks, W. P. (Hon.), GP, Franklin; Univ. of Cinn., 1942	1942	1946
Killian, Frank McClure, OALR, Franklin; Univ. of Louisville, 1929	1929	1930

MADISON COUNTY SOCIETY⁴⁶

President: McElroy, James Lawrence, GP, Marshall; George Washington Univ., 1930	1930	1932
Secretary: Duck, Walter Otis, GP, Mars Hill; Hahnemann Med. Coll., 1943	1946	1946
Ditmore, Harry Boaz, GP, Marshall; Univ. of Va., 1925	1925	1947
Robinson, W. Locke, GP, Mars Hill; Med. Coll. of Va., 1929	1929	1945
Ross, George Floyd, GP, Hot Springs; Univ. of Pa., 1907	1908	1910
Sams, William Albert, GP, Marshall; Lincoln Memorial Univ., 1911	1919	1920
Vance, S. W., GP, Mars Hill; Emory, 1934	1934	1947

MARTIN-WASHINGTON-TYRRELL COUNTIES SOCIETY⁴⁷

President: Furgurson, Ernest Whitmal, GP, Plymouth; Syracuse Univ., 1936	1937	1938
Secretary: Papineau, Alban, T & GP, Plymouth; Univ. of Pa., 1931	1933	1934
Bray, Thomas Latham, I, Plymouth; Univ. of Md., 1916	1916	1919
Brown, Victor Emanuel, I&S, Williamston; Syracuse Univ., 1935	1936	1937
Chaplin, Steenie Charles, GP, Columbia; Jefferson, 1922	1931	1933
Harrell, William Horace, GP, Creswell; Jefferson, 1925	1925	1926
Harris, Charles I., Jr., GP & S, Williamston; Univ. of Md., 1939	1939	1946
Llewellyn, John Thomas, I, Williamston; Med. Coll. of Va., 1937	1939	1941
McGowan, Claudius, I, Plymouth; Med. Coll. of Va., 1917	1917	1922
Pelphs, John Mahlon, I, Creswell; Jefferson, 1932	1932	1935
Pittman, Earl Eugene, I, Oak City; Med. Coll. of Va., 1919	1919	1920
Rhodes, James Slade (Hon.), I, Williamston; Med. Coll. of Va., 1906	1906	1907
Rhodes, James Slade, Jr., I, Williamston; Med. Coll. of Va., 1941	1941	1946
Ward, Jesse Elliott (Hon.), GP, Robersonville; Univ. of Md., 1904	1904	1905
Ward, Vernon Albert (Hon.), I, Robersonville; Jefferson, 1908	1908	1914
Ward, Walter Elliott, I, Robersonville; Med. Coll. of Va., 1940	1940	1942
Williams, John W., PH, Williamston; Univ. of Md., 1906	1906	1906

McDOWELL COUNTY SOCIETY⁴⁸

President: McIntosh, Donald Munro, Jr., GP, Marion; Univ. of Pa., 1933	1935	1936
Secretary: Miller, Lloyd D., GP, Marion; Med. Coll. of Va., 1939	1947	1947
Hagna, Lewis William, GP, Marion; Univ. of Pa., 1936	1938	1940
Hemphill, Clyde Hoke, OALR, Highlands; Univ. of Md., 1913	1913	1916
Johnson, John Brown (Hon.), S, Old Fort; Univ. of Louisville, 1905	1914	1914
Jonas, John Frank (Hon.), GP, Marion; Baltimore Med. Coll., 1903	1903	1903
Justice, Gaston B. (Hon.), GP, Marion; Atlanta Coll. of P. & S., 1907	1907	1908
†Kirby, Guy S. (Hon.), GP, Marion; Univ. Coll. of Med., Richmond, 1897	1896	1903
McBee, Paul Thomas, S, Marion; Med. Coll. of Va., 1930	1930	1933
McIntosh, Donald Munro (Hon.), S, Old Fort; Med. Coll. of Va., 1904	1907	1908
Miller, John Floyd, S, Marion; Medico-Chir. Coll. of Phila., 1906	1915	1919
Robinson, William Ashby, Old Fort; Med. Coll. of Va., 1900	1903	1930
Rowe, George C., GP, Marion; Univ. of Pa., 1939	1939	1944
Rowe, Virginia Copeland, GP, Marion; Tulane, 1939	1939	1942

MECKLENBURG COUNTY SOCIETY⁴⁹

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President: Ranson, John Lester, Sr. (Hon.), Anes, Charlotte; N. C. Med. Coll., 1911	1911	1912
Secretary: Johnston, William Oliver, I, Charlotte; Vanderbilt, 1936	1936	1940
Adams, James Robert, Pd, Charlotte; Univ. of Va., 1928	1932	1933
Alexander, James Moses, I, Charlotte; McGill Univ., 1934	1934	1937
Alexander, James Ramsey (Hon.), Charlotte; Univ. of Md., 1894	1894	1899
Andrews, Edward David, Charlotte; Med. Coll. of S. C., 1917	1924	1930
Ashe, John Rainey (Hon.), Pd, Charlotte; Columbia, 1911	1915	1915
Austin, DeWitt Ray, P&U, Charlotte; Jefferson, 1917	1917	1919
Austin, Frederick Da Costa, Jr., S&U, Charlotte; Vanderbilt, 1937	1937	1939
Baird, Harry Haynes, U, Charlotte; Washington Univ., 1942	1942	1944
Baker, Thomas Williams, I, Charlotte; Univ. of Pa., 1931	1931	1938
Barnes, Margaret A., P, Charlotte; Univ. of Va., 1943	1943	1945
Barron, Archibald Alexander (Hon.), PN, Charlotte; Vanderbilt, 1909	1910	1911
Baxter, Oscar Dixon, R, Charlotte; Jefferson, 1924	1924	1929
Bellows, Rowland Thompson, NS, Charlotte; Cornell, 1930	1940	1941
Bethel, Millard Baimbridge, PH, Charlotte; Univ. of Tenn., 1936	1938	1939
Bigham, Roy Stinson, Jr., I, Charlotte; Univ. of Va., 1941	1941	1946
Black, George William, GP, Charlotte; Med. Coll. of Va., 1924	1924	1925
†Blair, Andrew, I, Charlotte; Univ. of Pa., 1924	1925	1926
Blalock, Burman Karl, GP, Charlotte; Univ. of Md., 1913	1913	1917
Bost, Thomas Creasy, S, Charlotte; George Washington Univ., 1915	1920	1921
Brabson, John Anderson, S, Charlotte; Harvard, 1939	1943	1944
Bradford, Wallace Brown, ObG, Charlotte; Univ. of Pa., 1932	1932	1937
Bradford, Williamson Ziegler, ObG, Charlotte; Univ. of Pa., 1928	1928	1930
Brenizer, Addison Gorgas (Hon.), S, Charlotte; Johns Hopkins, 1908	1911	1911
Bunch, Charles, S, Charlotte; Univ. of S. C., 1931	1931	1935
Byrnes, Thomas Henderson, Path, Charlotte; Med. Coll. of S. C., 1926	1932	1932
Choate, Allyn Blvthe, I, Charlotte; Med. Coll. of Va., 1929	1929	1933
Cochrane, Fred Richard, Charlotte; Jefferson, 1942	1942	1946
Cooke, H. M., GP, Charlotte; Med. Coll. of Va., 1941	1943	1943
Cornell, William Sessions, S, Charlotte; Emory, 1931	1938	1938
Craven, Thomas, GP, Huntersville; Jefferson, 1917	1917	1919
Crowell, James Allen, ObG, Charlotte; La. State Univ., 1939	1946	1946
Daniel, Walter Eugene, U, Charlotte; Med. Coll. of Va., 1931	1938	1938
Davidson, John E. S. (Hon.), Oph, Charlotte; Univ. of Md., 1894	1894	1898
DeCamp, Allen Ledyard, ObG, Charlotte; Univ. of Pa., 1934	1937	1938
Dorenbusch, Alfred A., Otol., Charlotte; Univ. of Louisville, 1940	1946	1946
Draper, Arthur J., I, Charlotte; Harvard, 1942	1945	1945
Edgerton, Glenn Souders, ObG, Charlotte; Temple, 1932	1932	1934
Elliott, Joseph Alexander, D, Charlotte; Univ. of Mich., 1914	1919	1920
Elliott, Joseph Alexander, Jr., Charlotte; Univ. of Michigan, 1944	1944	1945
Faison, Elias Sampson, I, Charlotte; Emory, 1929	1929	1933
Faison, Yates Wellington (Hon.), Pd, Charlotte; Harvard, 1910	1910	1911
Ferguson, Robert Thrift, G, Charlotte; Univ. Coll. of Med., Richmond, 1906	1909	1922
Fleming, Lawrence Edwin, S, Charlotte; Univ. of Pa., 1931	1931	1934
Foster, Clarence B., Onh, Charlotte; Univ. of Vermont, 1932	1945	1946
Franklin, Ernest Washington, ObG, Charlotte; Univ. of Pa., 1930	1930	1932
Gage, Lucius Gaston, I, Charlotte; Univ. of Va., 1915	1921	1922
Gallant, Robert Miller (Hon.), GP, Charlotte; N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Or, Charlotte; Medico-Chir. Coll. of Phila., 1913	1922	1923
Gay, Charles Houston, Pd, Charlotte; Duke, 1933	1936	1938
Gibbon, James Wilson, S, Charlotte; Jefferson, 1918	1920	1921
Gibbon, Robert Lardner (Hon.), S, Charlotte; Jefferson, 1887	1887	1888
Gilmour, Monroe Taylor, I, Charlotte; Harvard, 1936	1940	1941
Gordon, John Simpson, ALR, Charlotte; Univ. of Pa., 1931	1947	1947
Greenwood, James G., Hosp Res., Charlotte; Univ. of Pa., 1944	1944	1947
Hamer, Jerome B., S, Charlotte; Univ. of Ga., 1938	1938	1940
Hamer, William Alexander, Anes, Charlotte; Univ. of Md., 1930	1930	1932
Hand, Edgar Hall (Hon.), PH, Charlotte; N. C. Med. Coll., 1907	1907	1913
Hansen, Alton S., R, Charlotte; Rush Med. Coll., 1930	1947	1948
Hardman, Edward Francis, ObG, Charlotte; Temple, 1938	1947	1947
Harrell, W. Fletcher, P, Charlotte; Univ. of Va., 1943	1947	1947
Hart, Verling Kersey, ALR, Charlotte; Univ. of Pa., 1921	1924	1925
Hawes, George Aubrey, U, Charlotte; Vanderbilt, 1933	1939	1939
Hemphill, James Eugene, R, Charlotte; Univ. of Va., 1937	1942	1942
Henry, Hector Himel, PH, Charlotte; Tulane, 1936	1939	1940
Hipp, Edward Reginald, S, Charlotte; Univ. of Va., 1918	1920	1921
Hipp, Edward Reginald, Jr., Charlotte; Univ. of Va., 1947	1947	1947
Hodges, Horace Hayden, I, Charlotte; Univ. of Pa., 1940	1940	1947
Holden, Howard Thompson, OALR, Charlotte; Univ. of Va., 1934	1945	1946

† Deceased.

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Holton, Thomas Jefferson, OALR, Charlotte; Emory, 1909	1925	1926
Hope, Alex Chalmers, S&G, Charlotte; Med. Coll. of S. C., 1937	1945	1945
Houser, Oscar Julian (Hon.), OALR, Charlotte; N. C. Med. Coll., 1914	1914	1916
Hovis, Leighton Watson (Hon.), OALR, Charlotte; N. C. Med. Coll., 1904	1904	1906
Hunt, Jasper Stewart, Pd, Charlotte; Vanderbilt, 1929	1932	1933
Jacobs, Julian Erich John, Or, Charlotte; Univ. of Neb., 1935	1939	1940
Johnston, James Gilliam (Hon.), OALR, Charlotte; Vanderbilt, 1899	1913	1916
Jones, Grace Germania, S, Charlotte; Woman's Med. Coll. of Pa., 1934	1942	1943
Jones, Otis Hunter, ObG, Charlotte; Columbia, 1933	1933	1937
Ingram, William E., GP, Charlotte; Univ. of Md., 1944	1947	1948
Kelly, Luther Wrentmore, I, Charlotte; Univ. of Va., 1924	1926	1927
Kennedy, John Pressly, S, Charlotte; Jefferson, 1915	1915	1920
Kennedy, Leon Toland, I, Charlotte; Jefferson, 1935	1937	1939
Kimmelstiel, Paul, Path, Charlotte; Tuebingen, Germany, 1926	1940	1941
King, Parks McCombs (Hon.), GP, Charlotte; N. Y. Univ., 1902	1902	1904
Kneedler, William Harding, I, Charlotte; Univ. of Pa., 1926	1946	1947
Kossove, Albert Anthony, PN, Charlotte; Med. Coll. of Va., 1938	1940	1941
Kossove, Irene Levy, ObG, Charlotte; Med. Coll. of Va., 1939	1940	1941
Lafferty, John Ogden, R, Charlotte; Univ. of Pa., 1942	1942	1944
Lafferty, Robert Hervey (Hon.), R, Charlotte; N. C. Med. Coll., 1906	1906	1906
Leinbach, Robert Frederic (Hon.), I, Charlotte; Univ. of Pa., 1907	1907	1910
Leonard, Ruth, Oph, Charlotte; Temple, 1942	1942	1945
Lymberis, Marvin N., Oph, Charlotte; Tulane, 1941	1947	1948
Lynch, Kenneth Merrill, Jr., U, Charlotte; Johns Hopkins, 1942	1947	1947
MacConnell, John Wilson (Hon.), OALR, Davidson; Univ. of Md., 1907	1908	1909
MacDonald, J. Kingsley, ObG, Charlotte; McGill Univ., Canada, 1926	1946	1946
Martin, William Francis, S, Charlotte; Univ. of Md., 1920	1920	1923
Massey, Charles Caswell, Pr, Charlotte; Jefferson, 1923	1923	1925
Matthews, Vann Marshall, Ob, Charlotte; Univ. of Pa., 1918	1918	1921
Matthews, William Camp, I, Charlotte; Univ. of Va., 1937	1939	1939
Maver, Walter Brem, D, Charlotte; Univ. of Pa., 1930	1932	1933
McCarty, Ralph L., S, Charlotte; Tulane, 1942	1946	1947
McCoy, Thomas Marshal (Hon.), GP, Charlotte; N. C. Med. Coll., 1905	1906	1906
McDonald, Angus Morris, U, Charlotte; Univ. of Pa., 1928	1935	1937
McKay, Clinton Hull, I, Charlotte; Univ. of Tenn., 1939	1947	1947
McKay, Hamilton Witherspoon (Hon.), U, Charlotte; Jefferson, 1910	1911	1913
McKav, Robert Witherspoon, U, Charlotte; Johns Hopkins, 1923	1928	1928
McKnight, Roy Bowman, S, Charlotte; Univ. of Pa., 1920	1920	1928
McLaughlin, Calvin Sturgis, Sr. (Hon.), GP, Charlotte; Univ. of Md., 1896	1896	1903
McLaughlin, Calvin Sturgis, Jr., GP, Charlotte; Univ. of Tenn., 1935	1937	1937
McLean, Ewen Kenneth, Pd, Charlotte; Univ. of Texas, 1919	1927	1928
Miller, Oscar Lee, Or, Charlotte; Atlanta Coll. of P. & S., 1912	1921	1922
Miller, Robert P., S, Charlotte; Duke, 1940	1942	1946
Montgomery, John Christian, Anes, Charlotte; Univ. of Pa., 1932	1935	1936
Moore, Alexander Wylie (Hon.), S&G, Charlotte; Univ. of Va., 1901	1912	1913
Moore, Oren (Hon.), G, Charlotte; N. C. Med. Coll., 1911	1911	1912
Moore, Robert Ashe, Pd, Charlotte; Univ. of Pa., 1923	1924	1925
Motley, Fred Elliott, ALR, Charlotte; Univ. of Mich., 1922	1926	1927
Munroe, Colin A., S, Charlotte; Duke, 1939	1941	1946
Munroe, Henry Stokes, Sr. (Hon.), S, Charlotte; Jefferson, 1903	1902	1904
Munroe, Henry Stokes, Jr., S, Charlotte; Duke, 1935	1937	1940
Murrah, Thomas A., III, Hosp Res., Charlotte; Med. Coll. of S. C., 1943	1947	1947
Nalle, Brodie Crump (Hon.), ObG, Charlotte; Univ. of Va., 1903	1905	1905
Nalle, Brodie Crump, Jr., U, Charlotte; Duke, 1939	1947	1947
Nance, Charles Lee, GP, Charlotte; N. C. Med. Coll., 1919	1921	1922
Naumoff, Philip, GP, Charlotte; Duke, 1937	1939	1939
Neal, Douglas, S, Charlotte; Med. Coll. of Va., 1942	1942	1948
Neblett, Herbert Clarence, Oph, Charlotte; Med. Coll. of Va., 1914	1921	1929
Newell, Leon Burns (Hon.), GP, Charlotte; Univ. of N. C., 1905	1905	1906
Newton, Howard Lowell, GP, Charlotte; Northwestern, 1921	1923	1925
Nisbet, Douglas Heath, I, Charlotte; Harvard, 1917	1917	1920
Norris, Charles Bradley, I, Charlotte; Georgetown, 1941	1941	1947
Northington, James Montgomery (Hon.), I, Charlotte; Med. Coll. of Va., 1905	1909	1909
Nowlin, George Preston, S, Charlotte; Univ. of Va., 1924	1929	1930
Palmgren, Einar Alexander, Jr., Charlotte; Hahnemann Med. Coll., 1941	1941	1942
Peeler, Clarence N. (Hon.), ALR, Charlotte; N. C. Med. Coll., 1906	1906	1908
Pennington, Glenn Walton, ALR, Charlotte; Univ. of Ga., 1937	1946	1946
Pettewav, George Henry (Hon.), GP, Charlotte; N. C. Med. Coll., 1913	1913	1914
Pettus, William Henry, Jr., S, Charlotte; Cornell, 1937	1941	1942
Pitts, William Reid, S, Charlotte; Harvard, 1933	1939	1940
Potter, E. Lindsay, Jr., GP, Charlotte; Temple, 1939	1939	1946
Query, Richard Zimri, Jr., I, Charlotte; Duke, 1934	1937	1938
Rankin, Watson Smith (Hon.), PH, Charlotte; Univ. of Md., 1901	1901	1901
Ranson, John Lester, Jr., Anes, Charlotte; Jefferson, 1942	1942	1943

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Rapp, Ira H., S, Charlotte; Univ. of Pa., 1943.....	1943	1948
Ray, Frank Leonard, U, Charlotte; Med. Coll. of Va., 1919.....	1919	1922
Reid, Calvin Graham, I, Charlotte; Univ. of Pa., 1935.....	1938	1939
Reid, Ralph Connor, S, Charlotte; Columbia, 1940.....	1942	1943
Robinson, Charles Wilson, GP, Charlotte; Univ. of Pa., 1930.....	1930	1932
Ross, Otho Bescent (Hon.), R, Charlotte; Univ. of Pa., 1909.....	1909	1912
Ross, Thomas Wallace, GP, Charlotte; Jefferson, 1927.....	1927	1930
Sanger, W. Paul, S, Charlotte; Vanderbilt, 1931.....	1937	1938
Scruggs, William Marvin, S, Charlotte; Univ. of Pa., 1914.....	1914	1920
Seay, Hillis Ledbetter, T, Huntersville; Vanderbilt, 1930.....	1933	1934
Selby, William Elledge, GP, Charlotte; Temple, 1934.....	1934	1936
Shull, Joseph Rush (Hon.), R, Charlotte; Univ. of Pa., 1910.....	1910	1913
Sloan, Henry Lee, Oph, Charlotte; Univ. of Pa., 1911.....	1913	1920
Smith, Franklin Calton, Oph, Charlotte; Jefferson, 1921.....	1921	1925
Southerland, Robert William, PN, Charlotte; Med. Coll. of Va., 1928.....	1939	1945
Sparrow, Thomas DeLamar, S, Charlotte; Univ. of Pa., 1920.....	1920	1923
Spencer, Benjamin Decatur, GP, Charlotte; McGill Univ., 1943.....	1947	1947
Squires, Claude Babbington, U, Charlotte; Jefferson, 1919.....	1919	1921
Steiger, Howard P., D, Charlotte; Duke, 1939.....	1947	1947
Stratton, James David, Oph, Charlotte; Rush Med. Coll., 1937.....	1946	1947
Stuckey, Charles L., I, Charlotte; Univ. of Va., 1940.....	1946	1947
Summerville, Walter Monroe, Path, Charlotte; Emory, 1936.....	1936	1937
Taylor, Andrew DuVal, A, Charlotte; Univ. of Md., 1934.....	1934	1937
Thompson, Silas Raymond (Hon.), U, Charlotte; N. C. Med. Coll., 1914.....	1914	1915
Todd, Lester Claire, CP, Charlotte; Univ. of Mich., 1918.....	1920	1920
Townsend, Maurice Lyndon (Hon.), Society Hill, S. C.; Indiana Med. Coll., 1906.....	1912	1913
Tuggle, Allan Davis, R, Charlotte; Univ. of Louisville, 1936.....	1940	1941
Tydemann, Frederick William Louis (Hon.), CP, San Francisco; N. C. Med. Coll., 1912.....	1912	1918
Venning, William L., Pd, Charlotte; Duke, 1939.....	1943	1944
Wannamaker, Edward Jones, Jr., I, Charlotte; Univ. of Pa., 1921.....	1924	1925
Watkins, Carlton Gunter, Pd, Charlotte; Washington Univ. Sch. of Med., St. Louis, 1943.....	1943	1946
Watters, Vernon Gregg, Jr., S, Charlotte; Univ. of Iowa, 1938.....	1947	1947
Welton, David Goe, D, Charlotte; Univ. of Wis., 1935.....	1939	1939
Whisnant, Albert Miller (Hon.), OALR, Charlotte; Coll. of P. & S., Baltimore, 1893.....	1893	1899
White, Thomas Preston, I, Charlotte; Univ. of Pa., 1922.....	1924	1925
Whitley, Ayer, GP, Matthews; Baltimore Med. Coll., 1908.....	1908	1919
Williams, McChord, S, Charlotte; Harvard, 1937.....	1937	1942
Winkler, Harry, Or, Charlotte; Rush Med. Coll., 1929.....	1931	1931
Woltz, John Henry Early, ObG, Charlotte; Univ. of Pa., 1942.....	1942	1946
Woods, James Baker, Jr., GP, Davidson; Med. Coll. of Va., 1922.....	1942	1943
Wright, Thomas Hasel, Jr., P, Charlotte; Univ. of Pa., 1936.....	1945	1946

MITCHELL-YANCEY COUNTIES SOCIETY⁵⁰

President: Bennett, William Lewis, GP, Burnsville; Lincoln Memorial Univ., 1911.....	1932	1933
Secretary: Berry, James W., GP, Bakersville; Bowman Gray Sch. of Med., 1944.....	1944	1946
Gouge, Arthur Edward, GP, Bakersville; Med. Coll. of Va., 1917.....	1917	1920
Laughren, Gus, GP, Burnsville; Univ. of Louisville, 1929.....	1931	1947
McRae, Cameron F., GP, Burnsville; Med. Coll. of Va., 1935.....	1935	1948
Ohle, E. R., GP, Celso; Harvard, 1941.....	1946	1947
Peterson, Charles A. (Hon.), GP, Spruce Pine; N. C. Med. Coll., 1907.....	1907	1908
Phillips, David Lawrence, GP, Spruce Pine; Bowman Gray Sch. of Med., 1945.....	1945	1948
Quincy, Fred Ben. Ob&Pd, Williamson, W. Va.; Med. Coll. of Va., 1900.....	1945	1945
Williams, Lester L., GP, Spruce Pine; Med. Coll. of S. C., 1880.....	1924	1927

MONTGOMERY—SEE STANLY-MONTGOMERY

MOORE COUNTY SOCIETY⁵¹

President: McMillan, Robert M., I, Southern Pines; Johns Hopkins, 1938.....	1938	1946
Secretary: Rosser, Robert Guthrie (Hon.), GP, Vass; N. C. Med. Coll., 1909.....	1909	1911
Bowen, James Poore, S, Aberdeen; Univ. of Md., 1929.....	1932	1934
Bowman, Hugh Edgar (Hon.), GP, Aberdeen; N. C. Med. Coll., 1904.....	1904	1905
Brady, Charles Eldon, GP, Robbins; Univ. of Md., 1944.....	1945	1948
Chester, Pinkney Jones, OALR, Southern Pines; N. C. Med. Coll., 1913.....	1913	1920
Felton, Robert Lee, Jr., GP, Carthage; Univ. of Pa., 1927.....	1927	1930
Grier, Charles Talmadge (Hon.), Carthage; N. C. Med. Coll., 1910.....	1912	1913
Grier, John C., P, West End; Jefferson, 1940.....	1940	1947
Heinitsh, George, OALR, Southern Pines; Duke, 1932.....	1932	1935
Hilborn, Robert Ross, GP, Mooresville; American Med. Missionary Co., 1904.....	1903	1939
Hollister, William F., S, Pinehurst; Duke, 1938.....	1940	1947
Kemp, Malcolm Drake, P, Pinebluff; Washington Univ., 1930.....	1930	1936
Lide, Thomas N., CP, Pinehurst; Duke, 1938.....	1947	1947

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Marr, Myron Whitmore (Hon.), I, Pinehurst; Tufts Med. Sch., 1907.....	1909	1915
†McLeod, Alexander H. (Hon.), S, Aberdeen; Baltimore Med. Coll., 1896.....	1896	1904
McLeod, Vida Canaday, GP, Southern Pines; Baylor Univ., 1919.....	1931	1931
Milliken, James Shepard (Hon.), GP, Southern Pines; Jefferson, 1915.....	1915	1916
Mobbs, Robert F., Pinehurst; Boston Univ., 1944.....	1947	1948
Monroe, Clement Rosenburg, S, Pinehurst; Univ. of Md., 1924.....	1925	1930
Mudgett, William Chase (Hon.), I, Southern Pines; Maryland Med. Coll., 1903.....	1908	1908
Owens, Francis Leroy, S, Pinehurst; Duke, 1934.....	1935	1938
Pishkoe, M. T., S, Pinehurst; Duke, 1936.....	1939	1945
Symington, John, GP, Carthage; Univ. of Md., 1902.....	1927	1928
Vanore, Andrew A., GP, Robbins; Long Island Sch. of Med., 1937.....	1947	1948
Willcox, Jesse Womble (Hon.), PH, Southern Pines; Univ. of N. C., 1906.....	1906	1906

NASH—SEE EDGECOMBE-NASH

NEW HANOVER COUNTY SOCIETY⁵²

President: Warshauer, Samuel E., I, Wilmington; Med. Coll. of Va., 1936.....	1936	1946
Secretary: Pigford, R. T., I, Wilmington; Univ. of Md., 1940.....	1940	1947
Anderson, Elbert Carl, Oph, Wilmington; Northwestern, 1937.....	1937	1939
Anderson, Irene, P, Wrightsville Beach; Univ. of Oklahoma, 1939.....	1947	1947
Barefoot, Graham Ballard, Path&R, Wilmington; Jefferson, 1923.....	1923	1924
Barefoot, William Frederick, S, Wilmington; Tulane, 1934.....	1934	1935
Bellamy, Robert Hartlee (Hon.), GP, Wilmington; Jefferson, 1902.....	1902	1902
Black, Paul Adrian Lawrence, Wilmington; Coll. of Med. Evangelists, 1932.....	1935	1938
Brock, Mary, Pd, Wilmington; Univ. of Pa., 1944.....	1947	1948
Brouse, I. E., R, Wilmington; McGill Univ., 1922.....	1946	1947
Brown, Landis Gold, S, Southport; Northwestern, 1934.....	1935	1938
Burdette, F. McP., GP & S, Southport; Med. Coll. of S. C., 1942.....	1947	1948
Codington, Herbert Augustus (Hon.), S, Wilmington; Univ. of Md., 1911.....	1915	1917
Coleman, Howe Reese, Jr., OALR, Wilmington; Univ. of Va., 1929.....	1941	1942
Cranmer, John B. (Hon.), S, Wilmington; Univ. of N. C., 1905.....	1905	1906
Crouch, Auley McRae, Sr., Pd, Wilmington; Jefferson, 1916.....	1916	1918
Crouch, Auley McRae, Jr., Pd, Wilmington; Jefferson, 1943.....	1943	1946
Davis, Charles Burdis, GP, Wilmington; Univ. of Pa., 1935.....	1935	1939
Dickie, J. W., GP, Wilmington; Univ. of Va., 1942.....	1947	1947
Dosher, William Sterling, ObG, Wilmington; Med. Coll. of Va., 1930.....	1930	1934
Elliot, Avon Hall, PH, Wilmington; Jefferson, 1919.....	1919	1921
Fales, Robert Martin, GP, Wilmington; Jefferson, 1932.....	1932	1936
Farthing, John Watts, S, Wilmington; Univ. of Pa., 1933.....	1938	1939
Freeman, Jere David, OALR, Wilmington; Med. Coll. of Va., 1918.....	1921	1922
Goodman, E. G., I, Wilmington; Duke, 1940.....	1940	1945
Graham, Charles Pattison, S, Wilmington; Harvard, 1932.....	1932	1937
Hare, Ransom Bryant, U, Wilmington; Med. Coll. of S. C., 1930.....	1933	1934
Harriss, Andrew Howell (Hon.), GP, Wilmington; Medico-Chir. Coll. of Phila., 1893.....	1892	1894
Hoggard, John Thomas, GP, Wilmington; Univ. Coll. of Med., Richmond, 1906.....	1906	1922
Hooper, Joseph Ward (Hon.), S, Wilmington; Univ. of Md., 1909.....	1912	1917
Johnson, George W., ObG, Wilmington; Univ. of Pa., 1920.....	1920	1921
Johnson, H. W., S, Wilmington; Harvard, 1939.....	1947	1948
Johnston, Christopher, I, Wilmington; Johns Hopkins, 1926.....	1930	1930
Knox, Joseph Clyde, Pd, Wilmington; Univ. of Md., 1924.....	1924	1932
Koonce, Donald B., S, Wilmington; Univ. of Pa., 1929.....	1929	1934
Koonce, S. Everett (Hon.), OALR, Wilmington; P. & S., Baltimore, 1896.....	1896	1900
Koseruba, George M., Pd, Wilmington; Coll. of Med. Evangelists.....	1939	1944
Lounsbury, James Breckinridge, ObG, Wilmington; Yale, 1935.....	1941	1942
McEachern, Duncan Roland, GP, Wilmington; Med. Coll. of Va., 1932.....	1932	1935
Mebane, William Carter, Jr., S, Wilmington; Univ. of Md., 1931.....	1932	1934
†Moore, William Houston (Hon.), Ob, Wilmington; Jefferson, 1910.....	1910	1911
Murchison, David Reid, I, Wilmington; Johns Hopkins, 1916.....	1922	1923
Pickard, H. M., I, Wilmington; McGill Univ., 1938.....	1946	1946
Powell, C. J., GP, Wilmington; Univ. of Tenn., 1943.....	1946	1947
Robertson, James Farish (Hon.), S, Wilmington; Univ. of Pa., 1913.....	1913	1916
Rodman, Robert Boyd, I, Wilmington; Med. Coll. of S. C., 1928.....	1928	1930
Rosenbaum, Maurice Milton, S, Long Beach, California; Univ. of Buffalo, 1934.....	1936	1937
Sidbury, James Buren (Hon.), Pd, Wilmington; Columbia, 1912.....	1915	1916
Sinclair, Roby Thomas, Jr., GP, Wilmington; Georgetown Univ., 1938.....	1938	1940
Sloan, David Bryan, OALR, Wilmington; Univ. of Pa., 1914.....	1914	1920
Smith, J. H., Path, Wilmington; Univ. of Pa., 1918.....	1944	1946
Stuck, P. L., GP, Wilmington; Northwestern, 1941.....	1947	1947
Swain, Wingate, GP & S, Shallotte; Duke, 1945.....	1945	1948
Taubenhaus, L. J., GP, Shallotte; Tulane, 1937.....	1948	1948

† Deceased.

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Taylor, William Ivey (Hon.), GP, Burgaw; N. C. Med. Coll., 1902.....	1904	1905
Taylor, William Ivey, Jr., GP, Burgaw; Jefferson, 1941.....	1941	1946
Thompson, George Richard Cunliffe, GP, Wilmington; Med. Coll. of S. C., 1939.....	1942	1943
Walden, Kennon C., S, Wilmington; Med. Coll. of Va., 1930.....	1943	1943
Walker, Elmer Pixley, GP, Wilmington; Emory, 1936.....	1936	1941
Wessell, John Charles (Hon.), I, Wilmington; Univ. of Md., 1900.....	1900	1900
Wilson, William J., Or, Wilmington; Univ. of Colorado, 1940.....	1948	1948
Wolfe, Nathan Carl, GP, Burgaw; Vanderbilt, 1929.....	1930	1944

NORTHAMPTON COUNTY SOCIETY⁵³

Fleetwood, Joseph Anderton, GP, Conway; Tulane, 1921.....	1921	1923
Lister, John L. (Hon.), U, Jackson; Med. Coll. of Va., 1896.....	1896	1909
Outland, Robert Boone, GP, Rich Square; Univ. of Pa., 1932.....	1933	1936
Stephenson, Bennett Edward, GP, Rich Square; Med. Coll. of Va., 1935.....	1935	1937

ONSLOW COUNTY SOCIETY⁵⁴

President: Cox, Samuel Clements, GP, Jacksonville; Med. Coll. of Va., 1935.....	1935	1937
Secretary: Stainback, William C., S & ObG, Jacksonville; Univ. of Pa., 1941.....	1941	1947
Bryan, Lorenzo Dow (Hon.), GP, Sneads Ferry; Tulane, 1910.....	1910	1911
Chandler, E. T., GP, Richlands; Univ. of Tenn., 1936.....	1946	1946
Corbett, James Patrick, GP, Swansboro; Washington Univ., St. Louis, 1928.....	1928	1930
Dixon, P. L., Jr., GP, Richlands; Univ. of Md., 1942.....	1942	1946
Gleitz, Allen A., S, Jacksonville; Jefferson, 1928.....	1944	1944
Henderson, John Percy, GP, Jacksonville; Med. Coll. of Va., 1918.....	1919	1921
Martin, John R., GP, Holly Ridge; N. Y. Med. Coll., 1943.....	1947	1947
Turlington, William Troy, Jr., GP, Jacksonville; N. Y. Univ., 1929.....	1929	1930

ORANGE—SEE DURHAM-ORANGE

PAMLICO COUNTY SOCIETY⁵⁵

President: Dees, Daniel Alfonzo (Hon.), OALR, Bayboro; Baltimore Med. Coll., 1903..	1903	1905
Secretary: Purdy, James Jarrett (Hon.), GP, Oriental; Med. Coll. of Va., 1900.....	1914	1915
Daniels, Oscar Carroll (Hon.), OALR, Oriental; Med. Coll. of Va., 1903.....	1903	1903
McCotter, St. Elmo (Hon.), Ob, Bayboro; Atlanta Coll. of P. & S., 1908.....	1908	1909

PASQUOTANK-CAMDEN-CURRITUCK-DARE COUNTIES SOCIETY⁵⁶

President: White, William Henry Clay, S, Elizabeth City; Univ. of Va., 1922.....	1929	1930
Secretary: Blanchard, Irvin T., GP, Elizabeth City; Temple, 1940.....	1940	1946
Bailey, C. Fletcher, GP, Elizabeth City; Univ. of Md., 1945.....	1945	1948
Bailey, M. H., Elizabeth City; Northwestern, 1931.....	1933	1940
Barkwell, John H., GP, Weeksville; Atlanta Sch. of Med., 1908.....	1924	1925
Bonner, John Bryan Havens, T, Elizabeth City; Med. Coll. of Va., 1932.....	1932	1941
Davis, William H., Jr., GP, Elizabeth City; Duke, 1944.....	1944	1947
Fearing, Isaiah (Hon.), GP, Elizabeth City; Coll. of P. & S., Baltimore, 1896.....	1896	1904
Gill, Joseph Armstrong, GP, Elizabeth City; Syracuse Univ., 1932.....	1932	1936
Hoggard, William A., GP, Manteo; Bowman Gray Sch. of Med., 1944.....	1944	1947
Johnston, Wiley Warren (Hon.), ObG, Manteo; N. C. Med. Coll., 1913.....	1913	1915
Owens, Zack Doxey, S, Elizabeth City; Univ. of Md., 1930.....	1930	1940
Parker, James Jarvis, GP, Elizabeth City; Temple, 1939.....	1939	1942
†Peters, William Anthony (Hon.), S, Elizabeth City; Temple, 1939.....	1915	1916
Peters, William Anthony, Jr., Elizabeth City; Duke, 1943.....	1944	1944
Salters, Frederic Hay, OALR, Elizabeth City; Med. Coll. of S. C., 1935.....	1939	1940
Sawyer, L. Everett, Elizabeth City; Duke, 1939.....	1946	1947
Shipley, J. L., OALR, Elizabeth City; St. Louis Univ. Sch. of Med., 1917.....	1945	1948
Wadsworth, George H., GP, Elizabeth City; Univ. of Cinn., 1935.....	1947	1948
Weeks, John F., GP, Elizabeth City; Jefferson, 1942.....	1942	1946
Wright, C. N., GP, Jarvisburg; Temple, 1941.....	1941	1946

PENDER COUNTY SOCIETY

PERQUIMANS—SEE CHOWAN-PERQUIMANS

PERSON COUNTY SOCIETY⁵⁷

President: Hedgpeth, Emmett Martin, GP, Roxboro; Northwestern, 1936.....	1937	1938
Secretary: Fitzgerald, John Dean, S, Roxboro; Duke, 1934.....	1934	1937
Beam, Hugh Martin, GP, Roxboro; Columbia, 1918.....	1918	1919
Gentry, George W. (Hon.), GP, Roxboro; Univ. of N. C., 1910.....	1910	1911
Nichols, Austin Flint (Hon.), GP, Roxboro; Univ. of N. C., 1908.....	1908	1909
Thaxton, Benjamin Adams (Hon.), GP, Roxboro; Jefferson, 1914.....	1914	1916

† Deceased.

PITT COUNTY SOCIETY⁵⁸

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Haar, Frederick Behrend, Pd, Greenville; Jefferson, 1932.....	1932	1935
Secretary: Irons, C. Fred, GP, Greenville; Med. Coll. of Va., 1941.....	1946	1946
Armistead, Drury Branch, I, Greenville; Med. Coll. of Va., 1931.....	1935	1936
Aycock, Edwin Burtis, GP, Greenville; McGill Univ., 1936.....	1936	1940
Barrett, John Milton, Ob, Greenville; Univ. of Pa., 1926.....	1926	1928
Basnight, Thomas Gray (Hon.), GP, Greenville; Univ. of Md., 1904.....	1905	1907
Beasley, Edward Bruce (Hon.), GP, Fountain; Univ. of Pa., 1911.....	1911	1915
Brooks, Fred Philips, I, Greenville; Univ. of Mich., 1933.....	1933	1935
Brown, William Moye Benjamin, ALR, Greenville; Med. Coll. of Va., 1929.....	1929	1931
Crisp, Sellers Mark, Ob, Greenville; Univ. of Pa., 1923.....	1923	1926
Dixon, George Grady (Hon.), GP, Ayden; Med. Coll. of Va., 1915.....	1915	1917
Fitzgerald, Charles Edmund, GP, Farmville; La. State Univ., 1937.....	1937	1940
Frizzelle, Mark T. (Hon.), GP, Ayden; Univ. Coll. of Med., Richmond, 1907.....	1907	1907
Garrenton, Connell, T, Bethel; Univ. of Pa., 1935.....	1935	1937
Hadley, Herbert W., Greenville; Bowman Gray Sch. of Med., 1943.....	1943	1947
Hawes, James Beebe, OALR, Greenville; Univ. of Va., 1932.....	1937	1938
Hoot, M. P., OALR, Greenville; Univ. of Oklahoma, 1934.....	1946	1947
Irons, Maline G., P, Greenville; Med. Coll. of Va., 1941.....	1946	1946
Mewborn, John Moses, GP, Farmville; Med. Coll. of Va., 1932.....	1932	1935
Moore, Davis Lee, GP, Winterville; Jefferson, 1936.....	1936	1938
Mumford, A. M., Winterville; Jefferson, 1942.....	1942	1944
Pace, Karl Busbee, GP, Greenville; Jefferson, 1914.....	1914	1920
Phillips, S. J., PH, Greenville; Tulane, 1921.....	1947	1947
Pott, W. H., ObG, Greenville; Univ. of Va., 1917.....	1944	1944
Smith, James, Greenville; Univ. of Tenn., 1944.....	1948	1948
Smith, Joseph, ObG, Greenville; Med. Coll. of Va., 1914.....	1916	1920
Smith, Randall Collins, Ayden; Jefferson, 1923.....	1923	1926
Spiggle, Charles Harold, GP, Grimesland; Med. Coll. of Va., 1928.....	1928	1930
Tucker, Earl Van, GP, Grifton; Med. Coll. of Va., 1930.....	1930	1935
Tyson, John Joyner, Des Moines, Iowa; Med. Coll. of Va., 1928.....	1928	1930
Williams, Roderick Thomas, GP, Farmville; Vanderbilt, 1937.....	1937	1942
Winstead, John Lindsay, S, Greenville; Univ. of Md., 1925.....	1925	1930

POLK COUNTY SOCIETY⁵⁹

President: Palmer, Marion Cherigny (Hon.), Tryon; Med. Coll. of S. C., 1910.....	1911	1914
Secretary: Woody, John Wycliffe Austin, GP, Tryon; Univ. of Pa., 1937.....	1939	1940
Jervey, Allen Jones, S, Tryon; Med. Coll. of S. C., 1905.....	1923	1926
Jervey, William St. Julien, Tryon; Temple, 1939.....	1939	1942
Preston, John Zenas, GP, Tryon; Temple, 1934.....	1935	1937

RANDOLPH COUNTY SOCIETY⁶⁰

President: Cannon, Eugene Bolivia, Asheboro; Vanderbilt, 1937.....	1937	1941
Secretary: Smith, Melvin Bowman, GP, Ramseur; Univ. of Pa., 1938.....	1938	1940
Barham, Berlin Francis, GP, Asheboro; Washington Univ., 1939.....	1939	1941
Barnes, Jesse Thomas, S, Asheboro; Med. Coll. of Va., 1929.....	1929	1932
Barnes, Tiffany, GP, Asheboro; Med. Coll. of Va., 1925.....	1925	1927
Dalton, Bennie Booker, GP, Asheboro; Duke, 1932.....	1933	1935
Edmondson, Frank, Jr., GP, Asheboro; Temple, 1937.....	1937	1939
Freeman, Alton Brown, GP, Randleman; Jefferson, 1929.....	1929	1947
Fritz, Jacob Luther, ALR, Asheboro; Temple, 1936.....	1936	1938
Griffin, Harvey Lee, GP, Asheboro; Med. Coll. of Va., 1926.....	1926	1928
Joyner, George William, S, Asheboro; Duke, 1932.....	1937	1938
Redding, John O., GP, Asheboro; Univ. of Pa., 1931.....	1931	1946
Soady, John Hostley, Pd, Asheboro; Toronto Univ., 1905.....	1924	1926
Sumner, George Herbert, PH, Asheboro; Tulane, 1923.....	1923	1924
Sykes, Rufus Preston, S, Asheboro; Tulane, 1929.....	1929	1931
Woodruff, William E., S, Asheboro; Duke, 1940.....	1945	1946

RICHMOND COUNTY SOCIETY⁶¹

President: Brown, Charles W., Hamlet; Georgetown Univ., 1937.....	1941	1946
Acting Secretary: Brown, Charles W., Hamlet; Georgetown Univ., 1937.....	1941	1946
Andrews, G. A., OALR, Hamlet; Med. Coll. of Va., 1929.....	1930	1948
Bristow, Charles Oliver, Pd, Rockingham; Jefferson, 1918.....	1920	1921
Garrett, Frank Bernard (Hon.), OALR, Rockingham; N. C. Med. Coll., 1912.....	1912	1914
Garrison, Ralph Bernard, Ob, Hamlet; Univ. of Md., 1933.....	1933	1935
Haines, Hilton D., ObG, Rockingham; George Washington Univ., 1934.....	1939	1947
Harris, J. Robert, Rockingham; Baylor Univ., 1936.....	1946	1947
Hatcher, Martin Armstead, U, Hamlet; Med. Coll. of Va., 1918.....	1920	1921
Henry, Tidal Boyce, I, Rockingham; Columbia, 1917.....	1920	1921
Howell, William Lawrence (Hon.), GP, Ellerbe; N. C. Med. Coll., 1910.....	1910	1912

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James, William Duer, S, Hamlet; La. State Med. Center, 1941.....	1941	1942
Long, Zachary Fillmore, Pd, Rockingham; Univ. of Pa., 1928.....	1928	1930
McIntosh, William Rufus, GP, Rockingham; N. C. Med. Coll., 1913.....	1916	1917
Milham, Claude Gilbert, T, Hamlet; Jefferson, 1927.....	1927	1930
Morris, Thomas A., Jr., GP, Hamlet; Univ. of Pa., 1941.....	1941	1947
Nicholson, Neill Graham, Sr., OALR, Rockingham; N. C. Med. Coll., 1917.....	1917	1920
Parsons, William Herbert, GP, Ellerbe; N. C. Med. Coll., 1916.....	1916	1919
Terry, William Calvin (Hon.), GP, Hamlet; N. C. Med. Coll., 1911.....	1912	1914
Webb, William P. (Hon.), GP, Rockingham; Med. Coll. of S. C., 1897.....	1897	1904

ROBESON COUNTY SOCIETY⁶²

President: Ward, Frank P., I, Lumberton; Med. Coll. of S. C., 1943.....	1943	1944
Secretary: Hedgpeth, Louten Rhodes, OALR, Lumberton; Univ. of Md., 1933.....	1933	1934
Allen, George Calvin, OALR, Lumberton; Rush Med. Coll., 1932.....	1933	1934
Baker, Horace Mitchell, Jr., S, Durham; Duke, 1944.....	1944	1948
Bender, John Joseph, GP, Red Springs; Coll. of P. & S., Boston, 1935.....	1937	1939
Bennett, Ernest Claxton, GP, Elizabethtown; Med. Coll. of Va., 1926.....	1926	1927
Benson, Norman Oliver, U, Lumberton; Univ. of Ga., 1930.....	1933	1934
Biggs, John Irvin, S, Lumberton; Northwestern, 1932.....	1937	1938
Bowman, Earle Ledbetter (Hon.), GP, Lumberton; Med. Coll. of Va., 1914.....	1914	1916
Britt, James Norment, GP, Lumberton; Atlanta Med. Coll., 1914.....	1923	1924
Bullock, Duncan Douglas, GP, Rowland; Med. Coll. of S. C., 1920.....	1927	1939
Croom, Robert DeVane, Jr., GP, Maxton; Med. Coll. of Va., 1934.....	1934	1937
Currie, Daniel Smith (Hon.), GP, Parkton; N. C. Med. Coll., 1906.....	1906	1906
Fagan, Philip, GP, Fairmont; Univ. of Creighton, 1942.....	1946	1947
Fisher, George Walton, Jr., GP, Elizabethtown; Bowman Gray Sch. of Med., 1943.....	1943	1947
Floyd, Hal Stanfield, GP, Fairmont; Med. Coll. of Va., 1943.....	1943	1948
Ford, Fred, GP, Maxton; Med. Coll. of S. C., 1938.....	1946	1946
Gibson, F. D., Jr., GP, Fairmont; Emory, 1940.....	1940	1946
Hardin, Eugene Ramsay, PH, Lumberton; Univ. of Ga., 1911.....	1915	1920
Hayes, James, GP, Fairmont; Med. Coll. of S. C., 1937.....	1938	1946
Hedgpeth, William Carey, ObG, Lumberton; Northwestern, 1933.....	1933	1936
Hodgin, Henry Hiram (Hon.), GP, Red Springs; N. C. Med. Coll., 1906.....	1906	1906
Holmes, Andrew Byron (Hon.), GP, Fairmont; Jefferson, 1910.....	1910	1914
Johnson, Charles Thomas, GP, Red Springs; Jefferson, 1920.....	1920	1922
Kinlaw, J. B., GP, Rowland; Temple, 1943.....	1943	1947
Kinlaw, Murray Carlyle, GP, Lumberton; Temple, 1935.....	1936	1937
Knox, John (Hon.), GP, Lumberton; Univ. of Md., 1906.....	1907	1907
Larson, J. D., GP, Rowland; George Washington Univ., 1943.....	1947	1948
Martin, James Alfred (Hon.), Pd, Lumberton; Med. Coll. of Va., 1915.....	1915	1917
McAllister, Hugh Alexander, ObG, Lumberton; Duke, 1937.....	1937	1940
McClelland, Joseph O. (Hon.), GP, Maxton; Med. Coll. of Va., 1908.....	1912	1913
McGrath, Frank Bernard, Pd, Lumberton; Northwestern, 1933.....	1937	1938
McIntyre, Stephen, S, Lumberton; Jefferson, 1928.....	1928	1930
McMillan, Roscoe Drake (Hon.), GP, Red Springs; Univ. of Md., 1910.....	1911	1912
Mees, Theodore H., I, Lumberton; Duke, 1942.....	1946	1946
Nash, John Frederick (Hon.), GP, St. Pauls; N. C. Med. Coll., 1914.....	1914	1916
Parker, James Roy, OALR, Lumberton; N. C. Med. Coll., 1917.....	1917	1943
Parsons, L. J., GP, Lumberton; N. Y. Univ., 1942.....	1943	1946
Patterson, F. M. Simmons, S, Laurinburg; Univ. of Pa., 1939.....	1939	1947
Peck, Harold A., R, Lumberton; Albany Med. Coll., 1916.....	1947	1947
Richardson, J. J., S, Laurinburg; Temple, 1942.....	1947	1947
Ricks, Leonard E. (Hon.), GP, Fairmont; Med. Coll. of Va., 1896.....	1896	1898
Shepard, Joseph Lawrence, GP, Pembroke; Emory, 1936.....	1947	1948
Smith, John McNeill (Hon.), GP, Rowland; Jefferson, 1908.....	1908	1909
Townsend, Robert Glenn, GP, St. Pauls; Tulane, 1927.....	1927	1934
Weinstein, Rayford Lee, GP, Fairmont; Jefferson, 1936.....	1936	1938
Wrenn, S. M., S&G, Lumberton; Med. Coll. of S. C., 1930.....	1930	1944

ROCKINGHAM COUNTY SOCIETY⁶³

President: Matthews, William W. (Hon.), GP, Leaksville; Chicago Coll. of Med. and Surg., 1913.....	1915	1916
Secretary: Harris, Russel P., S, Thomasville; Univ. of Louisville, 1943.....	1943	1947
Beach, William R., GP, Madison; Emory, 1934.....	1934	1935
Carter, Paul Conway, GP, Madison; Univ. of Md., 1916.....	1916	1920
Casteen, Kenan, OALR, Leaksville; N. Y. Univ., 1918.....	1919	1921
Cox, Alexander McNeill, GP, Madison; Med. Coll. of Va., 1932.....	1932	1938
Cozart, Benjamin Franklin, Reidsville; Med. Coll. of Va., 1931.....	1931	1931
Crescenzo, Victor M., I, Reidsville; Bowman Gray Sch. of Med., 1943.....	1943	1948
Cummings, Michael Penn (Hon.), GP, Reidsville; Jefferson, 1911.....	1911	1913
Dillard, George Penn, Draper; Bennett Med. Coll., 1916.....	1916	1919
Drake, Benjamin Michael, PH, Leaksville; Vanderbilt, 1931.....	1931	1941
Ferneyhough, William Todd, OALR, Reidsville; Univ. of Md., 1916.....	1926	1927

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Forbes, Thomas Earl, GP, Reidsville; Jefferson, 1940.....	1940	1942
Fulp, James Francis, GP, Stoneville; Duke, 1935.....	1937	1940
Hester, William Shepherd, S, Reidsville; Jefferson, 1926.....	1929	1930
Hisey, R. F., GP, Spray; Toronto, 1926.....	1947	1948
Johnson, William Alexander (Hon.), GP, Reidsville; N. C. Med. Coll., 1907.....	1909	1910
Klenner, Fred Robert, Reidsville; Duke, 1936.....	1937	1940
Lineberry, John Alson, PH, Tarboro; Univ. of Pa., 1938.....	1938	1940
McAnally, James McGehee, S, Reidsville; Univ. of Pa., 1927.....	1927	1928
McBride, M. H. (Hon.), Reidsville; Univ. Coll. of Med., Richmond, 1901.....	1901	1904
Moricle, Charles Hunter, S, Reidsville; Univ. of Md., 1939.....	1939	1942
Pace, Samuel Eugene, GP, Leaksville; Jefferson, 1932.....	1932	1939
Ray, John B. (Hon.), GP, Leaksville; Baltimore Med. Coll., 1898.....	1898	1898
Reeser, A. W., GP, Spray; Univ. of Tenn., 1936.....	1936	1947
Reynolds, Ernest Harold, GP, Reidsville; N. Y. Univ., 1935.....	1935	1936
Rudd, Paul Dalton, I, Reidsville; Med. Coll. of Va., 1932.....	1935	1935
Tuttle, Andrew Frier (Hon.), GP, Spray; N. C. Med. Coll., 1901.....	1901	1906
Tyner, Carl Vann, S, Leaksville; N. Y. Univ., 1916.....	1916	1919
Wilson, Newton Graves (Hon.), GP, Madison; N. C. Med. Coll., 1914.....	1914	1915

ROWAN-DAVIE COUNTIES SOCIETY⁶⁴

President: Robertson, Lloyd Harvey, Salisbury; Univ. of Pa., 1929.....	1929	1931
Secretary: Thurston, Thomas G., R, Salisbury; Harvard, 1941.....	1941	1947
Armstrong, Charles Wallace (Hon.), PH, Salisbury; Univ. of Md., 1914.....	1914	1915
Black, Kyle, S, Philadelphia, Pa.; Univ. of Michigan, 1938.....	1941	1946
Black, Oscar Reid (Hon.), GP, Landis; N. C. Med. Coll., 1914.....	1914	1918
Brown, Clarence Emanuel, GP, Faith; N. C. Med. Coll., 1918.....	1920	1921
Brown, James Arthur, Ob, Cleveland; Tulane, 1934.....	1934	1938
Busby, George Francis, S, Salisbury; Johns Hopkins, 1932.....	1932	1936
Busby, Julian Goode (Hon.), Pr&D, Salisbury; Univ. of Md., 1904.....	1904	1905
Choate, Glenn, Salisbury; N. C. Med. Coll., 1909.....	1909	1909
Choate, James Walter, GP, Salisbury; N. C. Med. Coll., 1915.....	1915	1924
†Clement, Edward Buehler (Hon.), OALR, Salisbury; Jefferson, 1906.....	1906	1906
Coffey, James Cecil, GP, Salisbury; Emory, 1937.....	1937	1940
Eagle, James Carr, GP, Spencer; Jefferson, 1923.....	1923	1925
Erb, Norris Scribner, U, Salisbury; Med. Coll. of Va., 1944.....	1946	1947
Feezor, C. N., GP, Salisbury; Temple, 1937.....	1937	1947
Field, Bob Lewis, GP, Salisbury; Med. Coll. of Va., 1931.....	1933	1939
Frazier, John Wesley, Jr., Salisbury; Jefferson, 1924.....	1924	1927
Glover, F. O., GP, Salisbury; Univ. of Pa., 1928.....	1931	1932
Greene, Garland V., GP, Mocksville; Med. Coll. of Va., 1916.....	1916	1923
Harding, Samuel Asberry (Hon.), GP, Mocksville; N. C. Med. Coll., 1910.....	1910	1913
Kavanagh, William Paul, GP, Cooleemee; Duke, 1935.....	1938	1939
Ketchie, James Meredith, Salisbury; Jefferson, 1922.....	1922	1925
Kiser, Glenn, Pd, Salisbury; Duke, 1941.....	1946	1948
Little, J. R., OALR, Salisbury; Jefferson, 1942.....	1942	1947
Long, William Matthews, S, Mocksville; Tulane, 1933.....	1934	1934
Lowery, John Robert (Hon.), Salisbury; Univ. of Md., 1904.....	1904	1913
Marsh, Frank Baker, I, Salisbury; Jefferson, 1919.....	1919	1922
McCutchan, Frank, OALR, Salisbury; Univ. of Va., 1920.....	1927	1928
McKenzie, Benjamin Whitehead, S, Salisbury; Jefferson, 1916.....	1916	1920
Mock, Charles Glenn, Salisbury; Univ. of Pa., 1935.....	1935	1938
Monk, Henry Lawrence (Hon.), Salisbury; Med. Coll. of Va., 1899.....	1899	1903
Newman, Harold Hastings (Hon.), S, Salisbury; Johns Hopkins, 1913.....	1914	1916
Newman, Harold Hastings, Jr., GP, Salisbury; Johns Hopkins, 1945.....	1945	1948
Oliver, Joseph Andrew, GP, Rockwell; Coll. of Med. Evangelists, 1933.....	1935	1937
Peeler, John H. (Hon.), Ob, Salisbury; Univ. Coll. of Med., Richmond, 1899.....	1899	1904
Plyler, Ralph Johnson, S, Salisbury; Univ. of Md., 1921.....	1924	1925
Randleman, D. A., GP, Salisbury; Emory, 1944.....	1944	1948
Scott, Allan F., Salisbury; Univ. of Tenn., 1943.....	1943	1947
Seay, Thomas Waller, GP, Spencer; Univ. of Md., 1921.....	1922	1924
Shafer, Irving Everett (Hon.), GP, Salisbury; N. C. Med. Coll., 1914.....	1914	1914
Shinn, G. C., China Grove; Univ. of Md., 1933.....	1933	1940
Smith, David Clark, I, Salisbury; Bowman Gray Sch. of Med., 1943.....	1944	1948
Smith, Jay L., GP, Spencer; Jefferson, 1942.....	1942	1946
Spencer, Frederick Brunell (Hon.), Salisbury; Univ. of N. C., 1909.....	1909	1911
Whicker, Max Evans, GP, China Grove; Univ. of Md., 1932.....	1932	1934
Woodson, Charles Whitehead (Hon.), GP, Salisbury; Columbia Univ., 1904.....	1905	1907
Wright, R. B., Jr., Salisbury; Tulane, 1942.....	1942	1947
Wyatt, Hubert Lee, GP, China Grove; Med. Coll. of Va., 1916.....	1924	1925

† Deceased.

RUTHERFORD COUNTY SOCIETY⁶⁵

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Hunt, James F. (Hon.), GP, Spindale; Univ. of Tenn., 1900.....	1900	1912
Secretary: Hendrick, Harry V., Rutherfordton; Johns Hopkins, 1943.....	1947	1947
Abernethy, Paul McBee, Rutherfordton; Bowman Gray Sch. of Med., 1943.....	1943	1947
Bass, Beaty Lee, S, Rutherfordton; Tulane, 1939.....	1939	1943
Biggs, Montgomery Herman (Hon.), S, Rutherfordton; Univ. of Pa., 1897.....	1907	1908
Bostic, William Chivous (Hon.), Ind, Forest City; N. C. Med. Coll., 1905.....	1905	1905
Bostic, William Chivous, Jr., Forest City; Univ. of Pa., 1926.....	1926	1927
Chastain, Loren Lee, GP, Cliffside; Bowman Gray Sch. of Med., 1944.....	1944	1948
Crawford, Robert Hope, S, Rutherfordton; Johns Hopkins, 1914.....	1920	1921
Eaves, Rupert Spencer, S, Rutherfordton; Med. Coll. of Va., 1932.....	1932	1933
Elliott, William McBrayer, GP, Forest City; Univ. of Ga., 1934.....	1934	1935
Glenn, Charles Foster, S, Rutherfordton; Univ. of Louisville, 1914.....	1927	1928
Harrill, Lawson Baxter (Hon.), S, Caroleen; Chattanooga Med. Coll., 1897.....	1902	1904
Head, William Thomas, GP, Melvin Hill; Atlanta Coll. of P. & S., 1911.....	1911	1923
Logan, Frank William Hicks, Rutherfordton; N. C. Med. Coll., 1916.....	1916	1919
Lovelace, Thomas Claude, GP, Henrietta; N. C. Med. Coll., 1917.....	1920	1920
Mills, Hugh H., Forest City; Harvard, 1940.....	1940	1946
Mitchell, Landis Patterson, Spindale; Washington Univ., 1938.....	1940	1941
Moss, George Oren, Ind, Cliffside; Emory, 1927.....	1927	1929
Ramsaur, Jackson Townsend, OALR, Rutherfordton; Univ. of Chicago, 1933.....	1934	1935
Rucker, Adin Adam (Hon.), GP, Rutherfordton; Univ. of Md., 1908.....	1908	1909
Tanner, Kenneth S., Jr., S, Rutherfordton; Harvard, 1943.....	1947	1948
Verner, Carl Hugh, Pd, Forest City; Atlanta Coll. of P. & S., 1912.....	1923	1927
Washburn, Benjamin Earl, PH, Rutherfordton; Univ. of Va., 1911.....	1912	1917
Wiseman, Perry Haynes, GP, Avondale; Med. Coll. of Va., 1925.....	1925	1926

SAMPSON COUNTY SOCIETY⁶⁶

President: Ayers, James Salisbury, GP, Clinton; Jefferson, 1932.....	1932	1937
Secretary: Newman, Glenn C., I, Clinton; Duke, 1939.....	1946	1946
Best, Glenn Eben, GP, Clinton; Temple, 1938.....	1938	1940
Brewer, James Street, GP, Roseboro; Jefferson, 1919.....	1919	1921
Crumpler, Paul (Hon.), GP, Clinton; Univ. of Tenn., 1907.....	1907	1908
Johnson, Amos Neill, GP, Garland; Univ. of Pa., 1933.....	1933	1935
Kendall, John Harold, GP, Clinton; Coll. of Med. Evangelists, 1934.....	1935	1935
Lee, J. Marshall, GP, Newton Grove; Med. Coll. of Va., 1916.....	1920	1923
Nelson, William Howell, GP, Clinton; Temple, 1934.....	1934	1936
Parker, Oscar Lee, OALR, Clinton; Med. Coll. of Va., 1918.....	1918	1919
Royal, Donnie Martin, GP, Salemburg; Med. Coll. of Va., 1926.....	1926	1928
†Sessions, Edwin Tate (Hon.), GP, Roseboro; N. C. Med. Coll., 1915.....	1915	1917
Sikes, Gibson L. (Hon.), GP, Salemburg; Univ. Coll. of Med., Richmond, 1900.....	1900	1902
Sloan, William Henry, GP, Garland; Univ. of Md., 1916.....	1916	1920
Small, Victor Roy, GP, Clinton; Ohio State Univ., 1916.....	1920	1921
Starling, Wyman Plato, R, Roseboro; Med. Coll. of Va., 1933.....	1933	1936

SCOTLAND COUNTY SOCIETY⁶⁷

President: Summerlin, Harry, GP, Laurinburg; Med. Coll. of S. C., 1933.....	1933	1935
Secretary: Erwin, E. A., GP, Laurinburg; Jefferson, 1943.....	1943	1946
Buchanan, Luther Thomas (Hon.), GP, Laurinburg; Jefferson, 1913.....	1913	1914
Creed, George O., GP, Laurel Hill; Med. Coll. of S. C., 1942.....	1946	1946
Livingston, Everett Alexander (Hon.), GP, Gibson; Univ. of Md., 1912.....	1912	1913
Moore, Kinchen Carl, PH, Laurinburg; Univ. of Mich., 1909.....	1909	1910
Pate, James Gibson (Hon.), GP, Gibson; Univ. of Pa., 1916.....	1916	1918
Wilkes, Marcus Branch, GP, Laurinburg; N. C. Med. Coll., 1912.....	1923	1923
Womble, Edwin C., GP, Wagram; Med. Coll. of S. C., 1942.....	1942	1947
Wooten, E. L., GP, Laurinburg; Med. Coll. of S. C., 1944.....	1947	1948

STANLY-MONTGOMERY COUNTIES SOCIETY⁶⁸

President: Fox, Dennis Bryan, S, Albemarle; Vanderbilt, 1937.....	1937	1941
Secretary: Wall, G. Ritchie, GP, Albemarle; Duke, 1940.....	1940	1946
Allen, Joseph A. (Hon.), GP, New London; Univ. Coll. of Med., Richmond, 1901.....	1901	1904
Andrews, Vernon L., GP, Mount Gilead; Columbia Univ., 1942.....	1942	1947
Brunson, Edward Porcher, S, Albemarle; Jefferson, 1921.....	1922	1934
Dunlap, Lucius Victor (Hon.), GP, Albemarle; Univ. of N. C., 1909.....	1909	1910
Eckerson, Charles Neil, GP, Troy; Med. Coll. of Va., 1935.....	1935	1942
Gaskin, Madge Baker, G, Albemarle; Med. Coll. of S. C., 1926.....	1933	1934
Gaskin, John Stover, GP, Albemarle; Med. Coll. of S. C., 1925.....	1929	1931
Gaskin, Lewis Roy, GP, Albemarle; Med. Coll. of S. C., 1921.....	1924	1926
Harris, William Thomas, GP, Troy; Med. Coll. of Va., 1925.....	1926	1927

† Deceased.

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Hill, William Henry, GP, Albemarle; Bowman Gray Sch. of Med., 1944	1944	1946
Hill, William Isaac (Hon.), GP, Albemarle; Univ. of Md., 1897	1897	1904
Koogler, Benjamin Robert, GP, Candor; Ohio State Med. Coll., 1938	1939	1941
Lapsley, Alberti Fraser, GP, Badin; Med. Coll. of Va., 1933	1936	1937
Laton, James Franklin (Hon.), OALR, Albemarle; N. C. Med. Coll., 1904	1904	1910
McKenzie, Wayland Nash, PH, Albemarle; Med. Coll. of Va., 1935	1935	1937
McLendon, Walter, GP, Oakboro; Med. Coll. of Va.	1941	1947
McLeod, William Louis, GP, Norwood; Temple, 1938	1938	1940
Moore, Donald Bain (Hon.), Ind, Badin; Univ. Coll. of Med., Richmond, 1913	1913	1915
Outlaw, Jackson Kent, OALR, Albemarle; Syracuse Univ., 1923	1926	1934
Peabody, Carroll A., GP, Norwood; Western Reserve Univ., 1940	1940	1946
Rankin, Pressly Robinson (Hon.), GP, Mt. Gilead; N. C. Med. Coll., 1910	1910	1912
Shaver, William Trantham, S, Albemarle; Univ. of Md., 1918	1920	1921
Tally, Bailey Thomas, S, Albemarle; Jefferson, 1921	1921	1922
Wardlaw, James L., Jr., GP, Biscoe; N. Y. Univ., 1941	1944	1948

SURRY-YADKIN COUNTIES SOCIETY⁶⁹

President: Abernethy, Olivia, GP, Elkin; Med. Coll. of Va., 1940	1940	1942
Secretary: Taylor, Vernon Williams, Jr., I, Elkin; Jefferson, 1938	1938	1941
Ashby, Edward Clayton (Hon.), S, Mt. Airy; Univ. of Pa., 1914	1914	1916
Beale, Seth McPherson, GP, Elkin; Tulane, 1935	1936	1938
Bell, Spencer Alexander, GP, Hamptonville; Northwestern, 1935	1935	1938
Brandon, Henry Allen, GP, Yadkinville; Syracuse, 1935	1935	1940
Caldwell, Robert Manfred, Ob, Mt. Airy; Univ. of Va., 1936	1938	1940
Cook, Ralph M., GP, Elkin; Univ. of Louisville, 1940	1946	1947
Finney, Jonathan Richard, Boonville; N. C. Med. Coll., 1910	1910	1911
Fleming, Frank R., GP, Elkin; Jefferson, 1935	1935	1937
Flippin, James Meigs (Hon.), GP, Pilot Mountain; Coll. of P. & S., Baltimore, 1884	1893	1900
Flippin, Samuel T. (Hon.), GP, Siloam; N. C. Med. Coll., 1898	1898	1898
Hall, John Moir, Elkin; Univ. of Va., 1942	1947	1947
Harding, B. H., GP, Elkin; Univ. of Va., 1934	1934	1935
Johnson, Harry Lester, S, Elkin; Univ. of Cincinnati, 1924	1924	1927
Johnson, Jeremiah Robert, GP, Elkin; Med. Coll. of Va., 1927	1927	1929
Jolley, John William, OALR, Elkin; Univ. of Cinn., 1935	1939	1941
Lovell, Robert Jones (Hon.), GP, Mt. Airy; Univ. of Md., 1910	1910	1912
Martin, Moir Saunders (Hon.), S, Mt. Airy; Univ. Coll. of Med., Richmond, 1905	1909	1916
McNeill, Claude Ackle, GP, Elkin; Bowman Gray Sch. of Med., 1943	1943	1948
Mitchell, Roy Colonel, I, Mt. Airy; Univ. of Pa., 1919	1921	1923
Newsome, Henry Clay, GP, Pilot Mountain; Univ. of Va., 1945	1945	1948
Royall, M. A. (Hon.), OALR, Elkin; Coll. of P. & S., Baltimore, 1885	1889	1904
Salmons, Henry Clay (Hon.), GP, Elkin; N. C. Med. Coll., 1904	1904	1908
Smith, Robert Edwin, Mt. Airy; Univ. of Pa., 1923	1923	1926
Sutter, Renzo, Mt. Airy; Univ. of Havana, 1938	1947	1948
Sykes, Charlie Louis, GP, Pilot Mountain; Georgetown Univ., 1938	1938	1939
Sykes, Ralph Judson, PH, Mt. Airy; Med. Coll. of Va., 1934	1936	1936
Woltz, John Louis (Hon.), Mt. Airy; Southern Med. Coll., 1897	1902	1904
Wood, William L., GP, Boonville; Bowman Gray Sch. of Med., 1945	1945	1947

SWAIN—SEE JACKSON-SWAIN

TRANSYLVANIA COUNTY SOCIETY⁷⁰

President: Osborne, Joseph Evans, S, Rosman; Med. Coll. of Va., 1930	1930	1930
Secretary:		
Lyday, Wilson, GP, Brevard; Emory, 1939	1939	1948
Newland, Charles Logan, S, Brevard; Med. Coll. of Va., 1927	1928	1932
Sader, Julius, Brevard; N. Y. Univ., 1928	1938	1939
Webster, Ben, Oph, Brevard; Georgetown Univ., 1900	1942	1942
Wilkinson, Jesse Bert, GP, Brevard; Memphis Hospital Med. Coll., 1906	1923	1925

TYRRELL—SEE MARTIN-WASHINGTON-TYRRELL

UNION COUNTY SOCIETY⁷¹

President: Whitt, Walter Fulton, Jr., GP, Monroe; Duke, 1942	1946	1946
Secretary: Ham, Clem, PH, Monroe; Med. Coll. of S. C., 1926	1929	1930
Bolt, Conway Anderson, GP, Marshville; Med. Coll. of S. C., 1926	1929	1930
Faulk, James Grady, S, Monroe; Med. Coll. of Va., 1931	1931	1932
Garren, Robert Hall (Hon.), OALR, Monroe; Univ. of Nashville, 1900	1901	1904
Goudelock, John Jeffries, U, Monroe; Med. Coll. of S. C., 1923	1924	1924
Hamer, Eugene F., GP, Monroe; Med. Coll. of S. C., 1941	1941	1946
McLeod, John Purl Utley, U, Marshville; Coll. of Med. Evangelists, 1939	1939	1940
Neese, Jack Harrell, S, Monroe; Duke, 1943	1946	1948

ROSTER OF FELLOWS

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Neese, Kenneth Earle, GP, Monroe; Washington Univ., 1929.....	1929	1934
Oleen, George G., Monroe; Univ. of Kansas, 1939.....	1946	1948
Ormand, John William, ALR, Monroe; Univ. of Cincinnati, 1926.....	1926	1928
Smith, George Marvin, GP, Monroe; N. C. Med. Coll., 1914.....	1914	1919
Williams, Edward Jerome, GP, Monroe; N. Y. Univ., 1917.....	1920	1921

VANCE COUNTY SOCIETY⁷²

President: Noel, William Walker, S, Henderson; Johns Hopkins, 1929.....	1939	1940
Secretary: Currin, R. G., GP, Henderson; Univ. of S. C., 1945.....	1948	1948
Bass, Harris Hartwell, Ob, Henderson; Univ. of Pa., 1928.....	1929	1930
Fenner, Edwin Ferebee (Hon.), Henderson; Univ. of Md., 1905.....	1906	1907
Furman, William H. (Hon.), Henderson; Jefferson, 1910.....	1910	1913
Newcomb, Andrew Purefoy, Jr., GP, Henderson; Jefferson, 1922.....	1922	1924
Newell, Hodge Albert (Hon.), OALR, Henderson; Coll. of P. & S., Baltimore, 1906.....	1906	1906
Rollins, Charles Dick, Henderson; Univ. of Pa., 1935.....	1935	1939
Rollins, Vance Benton, Henderson; Univ. of Pa., 1932.....	1932	1936
Upchurch, Robert T. (Hon.), Henderson; Jefferson, 1908.....	1908	1910
Wheeler, James Hartwick, GP, Henderson; Jefferson, 1918.....	1918	1920
White, Clarence Hunt, Oph, Henderson; Tulane, 1928.....	1930	1935

WAKE COUNTY SOCIETY⁷³

President: Paschal, George W., Jr., S, Raleigh; Jefferson, 1931.....	1931	1946
Secretary: Neal, J. Walter, S, Raleigh; Tulane, 1932.....	1934	1935
Ashby, Julian Warrington, PN, Raleigh; Univ. of Md., 1905.....	1921	1922
Barbee, George S. (Hon.), GP, Zebulon; Univ. of N. C., 1910.....	1910	1912
Blackwelder, R. G., NP, Raleigh; Med. Coll. of Va., 1932.....	1932	1945
Bolus, Michael, D, Raleigh; Jefferson, 1934.....	1934	1938
Branaman, Guy Hewitt, ObG, Raleigh; Med. Coll. of Va., 1939.....	1947	1947
Brian, Earl Winfrey, I, Raleigh; Duke, 1934.....	1936	1939
Broughton, Arthur Calvin, Jr., GP, Raleigh; Med. Coll. of Va., 1937.....	1937	1939
Buffalo, J. S. (Hon.), GP, Garner; Baltimore Med. Coll., 1900.....	1900	1904
Bugg, Charles Richard, Pd, Raleigh; Johns Hopkins, 1922.....	1924	1926
Bulla, Alexander Chester (Hon.), PH, Raleigh; N. C. Med. Coll., 1915.....	1915	1918
Caveness, William F., N, Raleigh; McGill Univ., 1943.....	1945	1946
Caveness, Zebulan Marvin (Hon.), Pr, Raleigh; Univ. of N. C., 1903.....	1903	1903
Caviness, Verne Strudwick, I, Raleigh; Jefferson, 1921.....	1921	1926
Chesson, Andrew L., S, Raleigh; Univ. of Md., 1936.....	1936	1946
Clark, Lintner, R, Raleigh; Indiana Univ., 1937.....	1941	1946
Combs, Joseph John, I, Raleigh; Columbia, 1926.....	1926	1929
Cooper, George Marion (Hon.), PH, Raleigh; Univ. Coll. of Med., Richmond, 1905.....	1905	1906
Corbin, George W., Jr., GP, Wake Forest; Univ. of Pa., 1943.....	1943	1947
Cozart, Wiley Simon (Hon.), GP, Fuquay Springs; Med. Coll. of Va., 1914.....	1914	1917
Crumpler, Amos Gilmore, GP, Fuquay Springs; Temple, 1936.....	1936	1938
Dewar, William Banks, I, Raleigh; Univ. of Pa., 1920.....	1920	1923
Dickinson, Kenneth D., Ob, Raleigh; Univ. of Minn., 1932.....	1935	1936
Eldridge, Charles Patterson, GP, Raleigh; Univ. of Pa., 1926.....	1926	1928
Ferrell, John A., PH, Raleigh; Univ. of N. C., 1907.....	1907	1912
Finch, Ollie Edwin (Hon.), I, Raleigh; Jefferson, 1915.....	1915	1917
Flowers, Charles Ely (Hon.), ObG, Zebulon; Med. Coll. of Va., 1913.....	1915	1916
Flowers, Charles Ely, Jr., ObG, Zebulon; Johns Hopkins, 1944.....	1944	1948
Fowlkes, William Mortimer, Jr., GP, Wendell; Bowman Gray Sch. of Med., 1944.....	1944	1947
Fox, Powell Graham, U, Raleigh; Med. Coll. of Va., 1922.....	1923	1929
Fox, Robert Eugene, PH, Albemarle; Univ. of Pa., 1926.....	1926	1929
Gibson, Milton Reynolds (Hon.), OALR, Raleigh; Univ. of Md., 1905.....	1905	1906
Glass, Sarah E., P, Raleigh; Rush Med. Coll., 1938.....	1948	1948
Goodwin, Oscar Sexton, GP, Apex; Jefferson, 1923.....	1923	1926
Hamilton, Alfred T., S, Raleigh; Harvard, 1936.....	1945	1946
Hamilton, John Homer, PH, Raleigh; Harvard, 1916.....	1926	1926
Hart, Lillard Franklin, GP, Apex; Bowman Gray Sch. of Med., 1944.....	1944	1947
Haywood, Hubert Benbury (Hon.), I, Raleigh; Univ. of Pa., 1909.....	1909	1910
Herring, Edward Humphrey, GP, Raleigh; Univ. of Pa., 1930.....	1930	1934
Hester, Joseph Robert, GP, Wendell; Univ. of N. C., 1910.....	1910	1911
Hill, Millard Daniel, D, Raleigh; Med. Coll., of Va., 1928.....	1928	1931
Hitch, Joseph Martin, D, Raleigh; Univ. of Va., 1933.....	1938	1939
Horton, Miles Christopher (Hon.), GP, Raleigh; Univ. Coll. of Med., Richmond, 1903.....	1911	1912
Horton, William Calvin (Hon.), Pr, Raleigh; Coll. of P. & S., Baltimore, 1897.....	1896	1904
Hunter, John Pullen, GP, Cary; Jefferson, 1919.....	1919	1921
Irmen, F. A., NP, Raleigh; George Washington Univ., 1911.....	1931	1947
Jackson, B. Richard, Pr & S, Raleigh; Temple, 1943.....	1947	1947
Jones, Carey Celester, GP, Apex; Jefferson, 1920.....	1920	1923
Judd, Glenn Ballentine, GP, Varina; Vanderbilt, 1932.....	1934	1935
Kitchin, Thurman D. (Hon.), Ed, Wake Forest; Jefferson, 1908.....	1908	1908

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Lane, Bessie Evans, I, Raleigh; Woman's Med. Coll. of Pa., 1921.....	1921	1926
Lascara, Vincent E., NP, Norfolk, Va.; Med. Coll. of Va., 1934.....	1947	1947
Lawrence, Benjamin Jones, S, Raleigh; Jefferson, 1918.....	1918	1920
Liles, Lonnie Carl, GP, Raleigh; Med. Coll. of Va., 1930.....	1930	1933
Mackie, George Carlyle, GP, Wake Forest; Univ. of Pa., 1928.....	1928	1932
Martin, Thomas Adrian, Oph, Raleigh; Univ. of Md., 1931.....	1939	1941
Massengill, Paul R., OALR, Raleigh; Duke, 1942.....	1947	1948
McGee, Robert Louis, S, Raleigh; Univ. of Pa., 1932.....	1932	1935
McManus, Hugh Forrest, Jr., GP, Raleigh; Med. Coll. of S. C., 1938.....	1938	1941
Mitchener, James Samuel (Hon.), OALR, Raleigh; Johns Hopkins, 1915.....	1915	1917
Neal, Kemp Prather, S, Raleigh; Harvard, 1917.....	1920	1921
Noble, Robert Primrose (Hon.), R, Raleigh; Univ. of N. C., 1907.....	1907	1908
Oliver, Adlai Stevenson, ObG, Raleigh; Jefferson, 1914.....	1914	1919
Oliver, Adlai Stevenson, Jr., ObG, Raleigh; Jefferson, 1940.....	1940	1948
Owen, John Fletcher, NP, Raleigh; Jefferson, 1920.....	1920	1927
Parsons, W. S., U, Mobile, Ala.; McGill Univ., 1917.....	1944	1944
Payne, E. Louise, ObG, Raleigh; Woman's Coll. of Pa., 1942.....	1942	1945
Powers, Frank Poydras, ALR, Raleigh; Univ. of Pa., 1927.....	1927	1928
Procter, Ivan Marriott (Hon.), ObG, Raleigh; Univ. of Pa., 1915.....	1915	1917
Reynolds, Carl Vernon (Hon.), PH, Raleigh; Univ. of N. Y., 1895.....	1895	1896
Rhodes, John Sloan, U, Raleigh; Harvard, 1929.....	1929	1936
Root, Aldert Smedes (Hon.), Pd, Raleigh; Univ. of Pa., 1911.....	1911	1913
Royster, Chauncey Lake, GP, Raleigh; Cornell, 1935.....	1935	1941
Royster, Hubert Ashley (Hon.), S, Raleigh; Univ. of Pa., 1894.....	1894	1895
Ruark, Robert James, ObG, Raleigh; Univ. of Pa., 1931.....	1931	1934
Sanders, L. H., Pd, Raleigh; Temple, 1942.....	1942	1946
Simpson, Paul Ervin, ObG, Raleigh; Duke, 1940.....	1945	1947
Sinclair, Lewis Gordon, S, Raleigh; Univ. of Pa., 1933.....	1933	1939
Stevick, Charles Paul, PH, Raleigh; Duke, 1936.....	1938	1940
Syron, Charles W., I, Raleigh; Duke.....	1946	1946
Swisher, Otto J., Jr., PH, Raleigh; Ohio State Univ., 1927.....	1946	1946
Thompson, Hugh Alexander (Hon.), Or, Raleigh; Univ. of Pa., 1914.....	1914	1917
Thompson, William Nelson, Hosp. Res., Raleigh; Boston Univ., 1939.....	1940	1940
Thornhill, Edwin Hale, Raleigh; Duke, 1938.....	1941	1942
Turner, Henry Gray (Hon.), S, Raleigh; Univ. of Pa., 1906.....	1907	1910
Umphlet, Thomas Leonard, I, Raleigh; Univ. of Pa., 1934.....	1934	1939
Wall, Roger Irving, OALR, Raleigh; Tulane, 1934.....	1934	1937
Ward, Wallace Clyde, GP, Raleigh; Univ. of Louisville, 1931.....	1931	1934
Weathers, Rupert Ryan, GP, Knightdale; Med. Coll. of Va., 1926.....	1926	1928
Webb, Alexander, Jr., S, Raleigh; Harvard, 1937.....	1940	1941
Wells, Warner L., S, Raleigh; Duke, 1938.....	1941	1946
West, Louis Nelson (Hon.), OALR, Raleigh; Jefferson, 1912.....	1912	1915
Whitaker, D. N., GP, Raleigh; Temple, 1940.....	1940	1946
Wilkerson, Annie Louise, ObG, Raleigh; Med. Coll. of Va., 1938.....	1938	1939
Wilkinson, C. T., Wake Forest; Tulane, 1922.....	1922	1924
Wilkinson, James S., D, Wake Forest; Univ. of Pa., 1938.....	1938	1940
Wilkinson, Robert Watson, Jr., GP, Wake Forest; Tulane, 1922.....	1923	1924
Williams, Charles Frederick, Pd, Raleigh; Jefferson, 1934.....	1934	1937
Williams, Robert, R, Raleigh; Univ. of Pa., 1935.....	1935	1946
Wilson, Thomas Barnette, Path, Raleigh; N. Y. Med. Coll., 1936.....	1946	1946
Wilson, W. Howard, I, Raleigh; Jefferson, 1937.....	1937	1946
Withers, William A., I, Raleigh; Rush Med. Coll., 1936.....	1937	1946
Wooten, Jane Herring, Raleigh; Duke, 1942.....	1944	1946
Wright, James Rhodes, OALR, Raleigh; Univ. of Md., 1940.....	1940	1940
Wright, John Bryan (Hon.), OALR, Raleigh; Univ. Coll. of Med., Richmond, 1899.....	1899	1900
Yarborough, Frank Ray, ALR, Cary; Univ. of Pa., 1923.....	1925	1926
Young, David A., P, Raleigh; Harvard, 1931.....	1931	1946

WARREN COUNTY SOCIETY⁷⁴

President: Peete, Charles Henry (Hon.), Ob, Warrenton; Univ. of Pa., 1903.....	1906	1906
Secretary: Foster, Howitt H., GP, Norlina; Jefferson, 1919.....	1919	1923
Holt, Thomas Jefferson (Hon.), OALR, Warrenton; Med. Coll. of Va., 1904.....	1904	1911
Hunter, Frank Patterson, GP, Warrenton; Univ. of Va., 1925.....	1925	1927
Macon, Gideon Hunt (Hon.), GP, Warrenton; Univ. Coll. of Med., Richmond, 1910.....	1910	1911

WASHINGTON—SEE MARTIN-WASHINGTON-TYRRELL

WAYNE COUNTY SOCIETY⁷⁵

President: Clark, Milton Stephen, I & A, Goldsboro; Emory, 1937.....	1937	1939
Secretary: Woodard, Albert G. (Hon.), Oph, Goldsboro; Univ. of N. C., 1907.....	1907	1909
Benton, George Ruffin, Sr. (Hon.), Fremont; Med. Coll. of Va., 1901.....	1905	1904
Benton, George Ruffin, Jr., Goldsboro; Univ. of Pa., 1934.....	1935	1938
Best, Deleon Edward, C, Goldsboro; Univ. of Md., 1924.....	1924	1926

ROSTER OF FELLOWS

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<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Bizzell, Marcus Edward, OALR, Goldsboro; Tulane, 1923.....	1923	1925
Bizzell, Thomas Malcolm (Hon.), GP, Goldsboro; Univ. of Md., 1908.....	1908	1912
Cobb, Donnell Borden, S. Goldsboro; Univ. of Pa., 1921.....	1921	1926
Crawford, William Jennings, U, Goldsboro; Med. Coll. of Va., 1922.....	1922	1923
Dale, Grover Cleveland, GP, Goldsboro; Univ. of Pa., 1925.....	1925	1927
Dowling, Judson Davie, Jr., GP, Mt. Olive; George Washington Univ., 1940.....	1941	1942
Etherington, John L., OALR, Goldsboro; Queen's Univ., Kingston, Canada.....	1946	1947
Harrell, Leon Jackson, Goldsboro; Univ. of Md., 1930.....	1930	1934
Henderson, Clair Crouse, GP, Mt. Olive; Univ. of Md., 1914.....	1914	1919
Hollowell, Claude Vermont, Goldsboro; Med. Coll. of Va., 1928.....	1928	1932
Howard, Corbett Etheridge, R, Goldsboro; Univ. of Pa., 1925.....	1925	1927
Irwin, Henderson (Hon.), GP, Eureka; Univ. of Md., 1912.....	1914	1916
Ivey, Henry B. (Hon.), R, Goldsboro; Univ. Coll. of Med., Richmond, 1911.....	1911	1917
Kistler, A. J., Hosp. Res., Goldsboro; Jefferson, 1902.....	1902	1908
Long, Ira Clinton, PN, Goldsboro; Univ. of Md., 1923.....	1923	1937
McCuiston, Allen Masten (Hon.), Pr, Mt. Olive; N. C. Med. Coll., 1911.....	1911	1917
McPheeters, Samuel Brown, PH, Goldsboro; Washington Univ., 1906.....	1933	1934
†Miller, Robert Bascom (Hon.), Pd, Goldsboro; Med. Coll. of Va., 1898.....	1900	1902
Miller, Walton H., Jr., GP, Goldsboro; Univ. of Cincinnati, 1940.....	1940	1948
Pate, Archibald Hanes, Goldsboro; Duke, 1937.....	1939	1941
Powell, E. Charles, Jr., ObG, Goldsboro; Univ. of Pa., 1935.....	1935	1937
Rand, Cecil Holmes, Ob, Fremont; Univ. of Pa., 1926.....	1926	1928
Rose, David Jennings, S, Goldsboro; Tulane, 1922.....	1922	1924
Rose, James William, GP, Pikeville; Tulane, 1928.....	1928	1931
Smith, William Carey, GP, Goldsboro; Univ. of Md., 1936.....	1936	1938
Stenhouse, Henry Merritt, Oph, Goldsboro; Univ. of Colorado, 1913.....	1937	1938
Strosnider, Charles Franklin (Hon.), I, Goldsboro; Univ. of Md., 1909.....	1910	1913
Tart, Baston Isaiah, Jr., Goldsboro; Temple, 1938.....	1938	1942
Thompson, Winfield L., S&G, Goldsboro; Univ. of Md., 1938.....	1938	1946
Trachtenberg, William, GP, Goldsboro; Duke, 1939.....	1946	1947
Warrick, Luby Albert, GP, Goldsboro; George Washington Univ., 1923.....	1923	1924
Wilfe, Harold E., D&R, Goldsboro; Med. Coll. of Va., 1943.....	1946	1946
Zealy, Albert Hazel, Jr., GP, Goldsboro; Harvard, 1930.....	1932	1934

WILKES-ALLEGHANY COUNTIES SOCIETY⁷⁶

President: Mills, James C., North Wilkesboro; Tulane, 1942.....	1946	1946
Secretary: Bundy, William Lumsden, North Wilkesboro; Vanderbilt, 1936.....	1936	1940
Bentley, James Gordon, GP, Moravian Falls; Univ. of Louisville, 1911.....	1938	1939
Bumgarner, John Reid, North Wilkesboro; Med. Coll. of Va., 1939.....	1939	1940
Eller, Albert J. (Hon.), PH, Wilkesboro; Coll. of P. & S., Baltimore, 1893.....	1895	1904
†Gilreath, Frank Hackett (Hon.), Wilkesboro; Univ. of Nashville, 1898.....	1898	1898
Hubbard, Frederic Cecil, S, North Wilkesboro; Jefferson, 1918.....	1919	1924
Lewis, Robert Edward, S, North Wilkesboro; Jefferson, 1944.....	1944	1946
McNeill, James Hubert, I, North Wilkesboro; George Washington Univ., 1926.....	1926	1927
Miles, Walter W., GP, Purllear; Univ. of Tenn., 1931.....	1933	1934
Mitchell, Gurney Talmage, GP, Wilkesboro; Jefferson, 1927.....	1927	1928
Newton, William King, OALR, North Wilkesboro; Med. Coll. of Va., 1931.....	1932	1933
Phillips, Ernest Nicholas, GP, North Wilkesboro; Med. Coll. of Va., 1930.....	1930	1935
Sink, Charles Shelton (Hon.), GP, North Wilkesboro; N. C. Med. Coll., 1912.....	1912	1913
Smith, Harold Benjamin, G, North Wilkesboro; Med. Coll. of S. C., 1929.....	1929	1930
Thompson, Clive Allen, GP, Sparta; Med. Coll. of Va., 1924.....	1924	1936
Triplett, William Romulus, GP, Purllear; N. C. Med. Coll., 1914.....	1915	1920

WILSON COUNTY SOCIETY⁷⁷

President: Tillery, Jack Gregory, GP, Wilson; Med. Coll. of Va., 1938.....	1938	1941
Secretary: Bardin, Robert Malcolm, GP, Wilson; Tulane, 1929.....	1934	1935
Bell, George Erick, ObG, Wilson; Jefferson, 1921.....	1921	1922
Best, Henry Blount (Hon.), GP, Wilson; Univ. of N. C., 1907.....	1907	1908
Blackshear, Thomas Joseph, OALR, Wilson; Emory, 1914.....	1923	1924
Bradshaw, Thomas Gavin, GP, Wilson; Med. Coll. of Va., 1909.....	1924	1924
Clark, Badie Travis, S, Wilson; Univ. of Ga., 1930.....	1934	1935
Cubberely, Charles L., Jr., GP, Wilson; Jefferson, 1940.....	1947	1947
Dickinson, Elijah Thomas (Hon.), ALR, Wilson; Med. Coll. of Va., 1895.....	1895	1900
Eagles, Charles Sidney (Hon.), GP, Saratoga; Univ. of N. C., 1909.....	1909	1910
Eason, Herman Franklin, T, Wilson; George Washington Univ., 1927.....	1927	1929
Fike, Ralph Llewellyn, GP, Wilson; Med. Coll. of S. C., 1932.....	1933	1934
Goodwin, Cleon Walton, S, Wilson; Univ. of Pa., 1934.....	1934	1940
Gouldin, John M., GP, Elm City; Med. Coll. of Va., 1944.....	1948	1948
Herring, Tilghman, Wilson; Johns Hopkins, 1938.....	1938	1941
Holmes, F. H., GP, Stantonsburg; Emory, 1942.....	1946	1947

† Deceased.

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Hunter, William Cooper, I, Wilson; Univ. of Pa., 1928.....	1928	1931
Kerr, Joseph T., S, Wilson; Jefferson Med. Coll., 1935.....	1935	1940
McClees, Edward Chadwick, GP, Elm City; Med. Coll. of Va., 1917.....	1920	1920
McLain, John Edward Gorsuch, T, Wilson; George Washington Univ., 1929.....	1941	1942
Meadows, J. H., OALR, Wilson; Med. Coll. of Va., 1934.....	1934	1947
Mitchell, George William (Hon.), GP, Wilson; Univ. Coll. of Med., Richmond, 1913.....	1913	1914
Pittman, Malory Alfred, Or, Wilson; Jefferson, 1921.....	1924	1927
Putney, Robert Hubbard, GP, Elm City; Med. Coll. of Va., 1914.....	1914	1920
Putney, Robert Hubbard, Jr., GP, Elm City; Med. Coll. of Va., 1943.....	1943	1946
Simons, Claude Ernest, I, Wilson; Med. Coll. of Va., 1930.....	1930	1935
Smith, Anderson Jones, GP, Black Creek; Univ. of Pa., 1921.....	1921	1923
Strickland, Arthur Thomas, Ob, Wilson; George Washington Univ., 1932.....	1932	1935
Strickland, Ernest Lee (Hon.), Pd, Wilson; Med. Coll. of Va., 1916.....	1916	1917
Williams, Albert Franklin (Hon.), GP, Wilson; Univ. of Md., 1901.....	1901	1904
Willis, Harry Clay, OALR, Wilson; Coll. of P. & S., Memphis, 1911.....	1916	1924
Winton, W. C., T, Wilson; Vanderbilt, 1924.....	1947	1948
Woodard, Charles Augustus (Hon.), S, Wilson; Univ. of Va., 1904.....	1904	1909

YADKIN—SEE SURRY-YADKIN

YANCEY—SEE MITCHELL-YANCEY

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SYMPOSIUM ON GENERAL PRACTICE

Introductory Remarks

DR. G. O. MOSS (Cliffside), Chairman: This year the program of the Section on General Practice is a departure from the custom of former years—that is, from a series of highly scientific but frequently unrelated papers presented by men who were not general practitioners but who thought they had something for the general practitioner. Today we are presenting a symposium by members who know the problems and pitfalls of general practice. It is felt that the role of the general practitioner, who was the originator of this organization, has become almost infinitesimal. Since it is common knowledge that one who prepares a paper derives more benefit from it than those who listen, it follows that the general practitioner should reassume his place in presentations before this section. The speakers on this program were especially selected because they are or were general practitioners qualified by experience to present the subjects which they have chosen.

* * * *

THE SAD PLIGHT OF THE GENERAL PRACTITIONER

G. O. MOSS, M.D.

CLIFFSIDE

It is difficult for the general practitioner, especially the lone practitioner in the small town or rural community, to consider his plight without a feeling of bitterness. There is every possibility that this feeling of bitterness may, and perhaps with some justification, become one of actual malice, unless some solution or some means of alleviation is found for his problems. Among the difficulties of such a man are long hours and a

freely self-admitted inadequacy to solve the problems with which he is so constantly confronted. His life is, if we may borrow a phrase from Mr. Churchill, one of "blood, sweat, and tears."

There are many obvious reasons for the sad plight of the general practitioner. A few of these are: (1) his diminished stature in the eyes of the public, brought about by overspecialization; (2) the dwindling number of his fellows in the same field, which has increased his load tremendously; (3) lack of convenient and proper hospital facilities; (4) inability to keep up with recent advances in medicine because of inadequate "brush-up" and postgraduate courses (which, all too often, he is unable to attend); and (5) inadequate remuneration for duties performed.

Reasons for the Trend Away from General Practice

The branch of medicine known as general practice is rapidly approaching extinction. This will not be good for either the profession or the public. There was a time when the position of the general practitioner was a highly elevated one, but thanks to World War I, with its creation of many specialists, his status as well as his number began to decline.

Why the trend away from general practice? Consider the attitude of the family of the medical student. How many of you, as general practitioners, have a son studying medicine and expect that son to return as your associate in general practice? Too few! Junior is going to be a great surgeon, an eminent ophthalmologist, or an outstanding obstetrician. When he, along with his fellow students, advances to the years of clinical study, he discovers that the staff of the hospital is made up exclusively of specialists, staff membership not being permitted general practitioners. He then decides that Dad

Presented before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 5, 1948.

was right. There must be something wrong with the fellow who is permitted—I should say forced—to go into the home at midnight with a thermometer, a stethoscope, and a few other simple diagnostic instruments and alone assume the responsibility for making decisions which are, at times, momentous. This physician, regardless of his ability or skill (unless such skill is attained through prescribed, proper channels) is not permitted to guide his patient through the so-called recognized hospital and avail himself of the aid of a well equipped laboratory, the valuable assistance of well trained house officers, and the privilege of consulting especially trained associates. He is disqualified because he condescends to carry a pill bag, to go to the patient's home at any hour to treat any type of illness, and, if the need arises, to accompany the patient to the hospital entrance.

This distorted view of hospital staffs is, in itself, sufficient to discourage the majority of medical students from selecting general practice as their field of medicine. Admittedly, there are a goodly number of smaller hospitals in this state which still permit the general practitioner to hold staff appointments; however, if we continue our present apathetic attitude toward this wave of exclusion we will find ourselves eliminated from staff membership even in these hospitals.

If you are doubtful that there is a serious trend away from general practice, ask the dean of your alma mater how many students now in the years of basic science in your school expect to do general practice upon completion of their training. He will tell you sadly that disproportionately few have that expectation, and that he is helpless to change the trend. That attitude of defeatism seems rather strange when one considers that all medical schools are so overwhelmed with applications that only a small percentage of the candidates can be admitted. Students are carefully selected with regard to grades and aptitude. Why should not the aim of the student enter into such deliberations along with his other qualifications? Out of the large number of applicants, surely the number who are interested in general practice is sufficient to replenish the dwindling ranks of family doctors.

The boy most apt to be interested in general practice comes from the small town or

rural area. He has not had the advantages of the boy from the urban area and, in general, will not attain as high a scholastic rating in college as that of his city cousin. On this basis alone, he is too often denied admission to the medical school. It is much easier for the rural boy to adjust himself to a city environment than for the urban boy to fit into a rural area—hence the unbalanced distribution of doctors. The comparative professional and social standing of the general practitioner in the larger towns is quite well known to the boy from such a town, and he is consequently less likely to be interested in that field of practice. The rural boy who is accepted by a medical school must necessarily be above the average intellectually to compensate for the handicap of his poorer pre-college training. There is little likelihood that this type of medical student will ever return to a rural area to do general practice. Perhaps the greatest bar to his return is the ever present opportunity to associate himself with a well known specialist who will see to it that he gets the proper residencies.

The recent war drew heavily from the already too thin ranks of general practice, leaving mainly the 4-F's and the overaged to carry the impossible load. The expectation of reinforcements and replacements following demobilization spurred tired men to carry on. This expectation did not materialize. The G.I. Bill of Rights offered many of the younger general practitioners an opportunity to escape their former peonage and enter the more lucrative branches of medicine, thus further increasing the grave shortage in the field of general practice.

Results of Overemphasis on Specialization

Organized medicine is, we must admit (the Supreme Court did), a monopolistic trust. Huge funds have, through the years, been given by individuals, governments, and philanthropic agencies for the education of doctors, for research, and for the establishment and maintenance of hospitals—more concisely, to improve public health and provide adequately for the sick. Yet we have failed to provide the services of a physician when he is needed to attend a simple illness which could and should be treated in the home or office, sparing the patient the frequently unnecessary expense and time of running the gauntlet of men and gadgets. The public has not been aroused because

surgery could not be secured when needed nor because refractions were not obtainable when indicated, but rather because it could not secure the services of a physician at 4 a.m. Is not this one of the important factors in the alarming success of the great battle now being waged by powerful forces for federalized medicine?

It is becoming increasingly difficult to get the men of general practice to lend a hand in the fight against socialized medicine. Frankly, I believe that the majority of general practitioners would welcome some sort of change. Organized medicine, by its failure to supply medical service when and where it is most sorely needed and at reasonable cost, has aroused public animosity, and by its failure to reinforce and replace in the field of general practice, it has not maintained good will in that branch. The general practitioner is interested in some sort of change which would increase his prestige and offer him a few more of the common decencies of life than has the present system under which he labors. He is intelligent enough to know that socialized medicine is not the solution to the medical care problem, but unless organized medicine within itself makes it possible for the sick patient—the paying as well as the indigent—to get a doctor when he needs one, then regulation from without is inevitable and deserved. I am personally against socialized medicine, but no more so than against the system which fails to provide what many believe to be the most essential professional service in the world.

Most general practitioners concur in the opinion that no doctor should be allowed the privilege of strict specialized training until he has had one or more years in general practice. He would then be in a position to know that panhysterectomies do not cure neurotics and that the success of an operation is not established by the patient's having survived the ordeal. The "chronic appendix" might become less frequent. He might even learn that people have lived many happy and productive years after being doomed by the roentgenologic diagnosis of incurable malignancy of the intestinal tract. A grave prognosis would not always be whispered to the family of the patient with a heart ailment purely on the findings of the electrocardiogram and the teleroentgenogram. The candidate would enter specialty training with a "doubting Thomas"

attitude toward the findings of precision instruments and gadgets when these findings do not agree with common sense. Specialization is essential, but not to the degree to which it has been carried. With overcrowding in any field, questionable practices begin.

Doctors have been outspoken in their criticism of labor organizations, particularly with reference to the narrow, restricted fields in which the individual members may work; yet no other group offered a better pattern for the labor leaders to follow in constructing their unions than the medical profession. In *Life Magazine* for October 15, 1946, the following caption appears beneath a picture:

"The movers' union is so split up in its organization that even within the one union some members are permitted to push a piano across a set, but a different member who cannot push pianos has to carry a bowl of flowers and place it on the piano. He is called a 'flower man.' The same union has also 'green men' who can handle only green props, like trees or shrubbery and grass. In a big battle scene that Paramount Studios once filmed, the members of an entire union did nothing but polish swords."

We, too, have "flower men," "green men," and "sword polishers," with a result which is just as absurd and frequently more disastrous than in the movie industry. The resultant overcharge in medical care is no less abhorrent than the overcharge for seeing a movie.

Income of the General Practitioner

Little need be said here concerning the income of the general practitioner. Even the income of the ditchdigger is ample now, provided he is willing to work two and occasionally three shifts and deny himself all holidays. The fees of the general practitioner are small, but fortunately his overload makes it possible for quantity to make up for the lack of quality in his income. Those of us who went through the depression of the late 'twenties and early 'thirties recall that in times of depression the general practitioner fares better, perhaps, than those in the more restricted branches of medicine. During a depression people do not find it necessary to consult diplomates of the various boards for "run-of-the-mill" illnesses. When there are too many diplomates—and who would deny that in some of the specialties this point is being reached?—some will have to resort to a more generalized practice, for which they are not qualified. One

wonders if a good depression now might not correct our faulty practices and make a fair and more equitable distribution of doctors, with respect to location as well as to the branch of medicine which they pursue.

Conclusion

The general practitioner would like a vacation, time for social life, time to attend medical meetings, and an opportunity to take frequent and much needed "brush-up" courses—in other words, a little of the leisure of which the followers of other branches get a great deal. In the area which this Society comprises, there have been very few times in the past twenty-five years when a general practitioner from a small town or rural area could take a much needed vacation with a clear conscience. Overworked, tired, underprivileged, undertrained, and consequently underpaid—that is the sad plight of the general practitioner.

As a branch of medicine, general practice must either die peacefully or fight its way back to its proper status. Good men must be encouraged to study medicine with general practice as their ultimate goal. Medical schools must be urged to accept a larger percentage of men who expect to become general practitioners. The proper place of the general practitioner must be established in the state societies and in the American Medical Association as well. Individually, the general practitioner must decrease the quantity of his work and increase the quality of the service he renders.

* * *

THE PROBLEMS OF RURAL PRACTICE

GEORGE F. BOND, M.D.

BAT CAVE

During the last several years, many millions of words have been written concerning the problems of country practice. This great bulk of writing, it seems to me, is about equally divided between sense and nonsense. It is my privilege today to add a few thousand words to the literature on this subject, and it will be up to you to judge on which side of the ledger my contribution will fall. Before beginning any real consideration of my subject, I would like to be perfectly clear on two points: *First*, when I speak of country doctors, I am referring to general practitioners, for it is obvious that none but a general practitioner can fulfill the require-

ments of a country doctor; *second*, by "a country doctor" I mean a physician who resides in a rural area, and whose work is confined to patients who live in the country.

Professional Qualifications of the Country Doctor

What are the professional qualifications of a country doctor? He must be an expert diagnostician in every field of medical practice. Because of the nature of his practice he will see and generally be required to treat the widest conceivable range of human disease. He must be equipped to render an accurate working diagnosis of practically every condition, both common and uncommon, which can be met in any of the associated fields of medicine, surgery, and obstetrics. In order to acquire the diagnostic ability necessary for a country practice the physician must equip himself through long hours of intensive clinical work and through seeing a greater volume and range of sick patients, both ambulatory and hospitalized, than is required as preparation for practice in the specialties. He will learn that most of his diagnostic work can be satisfactorily performed on the basis of a careful history, complete physical examination, and minimal laboratory studies. He must at all times prepare a careful differential diagnosis and critically evaluate his own work, since of necessity he is working without benefit of a colleague who normally supplies these factors in the formation of a bedside or office diagnosis.

In respect to therapy, the country doctor must be equipped to provide and administer all of the better known specific and nonspecific drugs required by the patient whom he sees, whether in the office or the home. Such a requirement makes for a burdensome load of pill boxes and therapeutic agents; and it is this practice of preparedness and adequacy which has earned for the country doctor and general practitioner the thankless title of "pill peddler." Apparently the ability to provide needed drugs at the proper time is more highly appreciated by our patients than by the more sophisticated and distantly removed members of our profession. Above all, however, the country doctor must have a reliable sense of useful therapy and must school himself to abstain from unreasonable, impractical, and experimental treatment with drugs. He is aware that his patient cannot always be relied upon to interpret

directions in precisely the same spirit in which they are written. The human equation in home treatment is nowhere more apparent than in country medicine, and the practitioner is constantly aware of the often amusing but occasionally fatal fallibility of his patients.

This, then, is a sketchy account of a country practitioner. These are the basic requirements of a professional man who is at once the most glamorized, the most pitied, and the most-needed member of our profession.

Explanations Offered for the Shortage of Country Doctors

We are all aware that approximately 70 per cent of the population of North Carolina is rural. North Carolina is still rated as an agricultural state. The chief concern of this paper is with the medical care of our rural population, what is being done about it, and how it might be improved. At least half of this rural population—roughly one million persons—is provided with medical services solely by country doctors. At present the total number of country doctors in North Carolina is less than one hundred. For twenty years past they have been a vanishing segment of our profession. Most of us can remember the day when every small rural community and crossroads had its permanent physician. Now the country doctor has all but completed his disappearing act. Let us examine some of the major problems responsible for his extinction.

The most popular current explanation for the shortage of country doctors is that a country practice offers no guarantee of economic security for the practitioner. It is generally believed that a country doctor is doomed to a life of near poverty and to the death of a pauper. While I am willing to grant that the gross annual income of the country physician does not in many cases approximate that of his city colleague, I do not subscribe to a story of poverty; nor do I believe that this is a real factor in the inadequate number of practitioners in rural areas.

If a man plans to begin a country practice, he is most likely to do so shortly after graduation and completion of his internship. At this time, although he may be in need of money, he is not likely to give very great consideration to economic factors in his choice of location. After a few years of country practice this man finds that, while his bank

balance may not compare favorably with that of doctors in urban areas, nevertheless he has been recompensed in more material ways by virtue of a barter system which is inherent in our country life, and which cannot be included in the annual income tax form. Actually, although fees in country practice are proportionately lower than those in other fields of medical endeavor, the services of the doctor are generally on a cash basis, which eliminates burdensome bookkeeping; and most of us learn that the concept of pure charity in a country practice is a false one, since the very poorest of patients will insist on payment in kind for services rendered. At the close of his useful life, the average country doctor is not likely to have accumulated a large bundle of securities or an excessive bank account; but he is almost certain to possess many acres of farm land, a satisfactory dwelling, and many other material means of income which will serve him in his declining years, and which can be passed on to his family without depreciation.

A second, and often effective, deterrent to the young graduate contemplating a country practice is the belief that the doctor and his family are completely isolated from social contacts on a level which his education and standing should require. This is in a large sense true, but it must be considered that some men will seek a rural practice because they like the company of rural people. The doctor, together with the minister and educator, is principally responsible for any social progress in his community. Therefore, the level of social and educational contacts afforded the family of the doctor can be raised by his influence. The country doctor cannot be at any time a figure apart from the integral life of his community; if the standards of his environment are below par, he has himself to blame for the deficiency.

Finally, it is argued that a country doctor, because of his relative isolation from fellow members in organized medicine, is likely to neglect his continuing need for education, thus falling into methods of practice which are not sufficiently modern for current approval; and that, because of his autonomy and total self-reliance, he might practice bad medicine by exceeding his therapeutic abilities, and by failing to secure consultation and advice from other members of his profession. This is a charge which can readily be answered. If a man is of such training

and constitution as to permit himself to practice bad medicine, he will do so under any circumstances. This danger of country practice is a minor factor in the total picture.

The Greatest Problem of the Country Doctor

These, then, are the three most prominent current arguments against rural practice: (1) poor remuneration, (2) inadequate social and educational life for the doctor and his family, and (3) dangers of isolation. During the past ten years every effort which has been put forward to solve the problem of the disappearing country doctor has been aimed at one or all of these points. I should like to submit today that the most important point involved in the shortage of country doctors has not yet been adequately propounded, and certainly no proper move has been made toward its solution.

The greatest problem of our present-day country doctor is that he lacks adequate and convenient hospital facilities which are necessary for the proper practice of medicine. By the standards of satisfactory medical practice twenty-five years ago, the facilities of a hospital were very rarely needed by the general practitioner. In those days a competent brand of medicine could be practiced in the office and in the home without resort to institutional benefits; but it is both unfair and foolish to expect a present-day graduate of a first-class medical school to locate in the country, where, because of a lack of nearby hospital facilities, he will be required to practice eighteenth-century medicine. The young man now entering a medical practice asks nothing more than the right to practice the best medicine of which he is capable; and he is well aware that, unless he has facilities at his command which are equal to those of any other doctor, he will often be forced to practice bad medicine. This burden cannot and should not be imposed on any present-day medical graduate.

Within our state about one million persons live more than ten miles from a hospital. If on-the-spot medical service is to be supplied to these people, then the physician supplying these services may be required to drive distances of one hundred miles a day to and from the nearest hospital in which are located his more serious medical cases, his surgical problems, and his obstetric cases—always provided that this is an open hos-

pital which permits some freedom of medical movement on the part of the general practitioner. Unfortunately, the rural practitioner will not often find an open hospital within his effective range. There is no reason why a proficient practitioner should voluntarily choose a field which would require that he should drive his car an average of one hundred and fifty miles a day. Such mileage is required of traveling salesmen but should not be a problem of a country doctor.

Is the Country Doctor Really Needed?

There are those who say that if the country doctor is disappearing, his need is more apparent than real, since, by virtue of improved highway systems, members of our rural population are now able to go to the nearest urban center for medical treatment. This is as flagrant a case of rationalization as can be found in current literature. No one can deny the need of home therapy for those bedridden patients who are best treated in the home and who could not afford frequent visits from a distant city practitioner. Nor is it reasonable to assume that, when medical services are required, the countryman will inevitably bundle up his kinfolks and fetch them to the city doctor at the proper office hours. If we are honestly to consider the problem of medical service to our rural population, we must consider it in terms of twenty-four hour service and on-the-spot attention. This goal cannot be achieved save through the services of a physician who resides in the area and who is able to see his patients at any time of the day or night, and to make necessary home calls without imposing an intolerable burden of expense on his patients.

If the country doctor disappears—and this is a possibility—then we must resign ourselves to an increasing maternal and fetal mortality. We must resign ourselves to neglected emergencies, to delayed surgery, to moribund medical cases. In short, we must prepare for an ever-increasing volume of cases which are complicated by self-diagnosis and self-treatment. And if this be the decision of organized medicine and of the general population of this state, then we must hold ourselves responsible for the medical neglect of a large percentage of our population.

Failure of the Medical Care Commission to Provide Hospital Facilities for Rural Areas

I have said that the country doctor lacks adequate hospital facilities. I refer only to an immediately available institution which will provide for safe delivery of our obstetric patients, for proper and adequate treatment of the majority of our medical cases requiring hospitalization, and for such minor surgery, emergency major surgery, and traumatic surgery as are commonly required in the practice of country medicine. This does not mean that the country doctor needs all of the facilities ordinarily available in a hundred-bed hospital, or even a sixty-bed hospital. We are asking only for an adequate workshop which should be designed to provide for 90 per cent of the cases which will be met in country practice; we assume that the good medical judgment of the doctor will cause him to refer the remaining 10 per cent of cases to more completely equipped institutions and to specialists whose judgment will best serve those patients.

But are these facilities available in 1948? Will these facilities be available in 1950? Under the provisions of the Hill-Burton act, the bulk of taxpayers' money made available is to be expended for the sole purpose of improving rural medical facilities. It is implicitly understood that the means of this improvement and the implementation of this act shall be in the hands of the medical care commissions of the various states. Let us look at the record.

In the state of North Carolina, which is believed to be one of the more progressive states in respect to rural medicine, we have had a period of almost thirty-six months in which to prepare an adequate program for providing rural medical and hospital facilities. As of today, no community hospitals of twenty-five beds or less are under construction within the borders of our state, except a pitiful few which are being built by virtue of civic pride, and with the aid of local funds. In no case have federal or state funds been made available for the construction of such outlying hospitals. We are told that any hospital or clinic of twenty-five beds or less must of necessity be substandard and a burden on the taxpayers. We are not told by what standards of hospital construction and maintenance such tiny institutions would be judged. The present program within our

state provides for the construction of hospitals in needy areas; but—and note this carefully—these proposed hospitals are to be of a capacity of sixty beds or more, and, under the present plan, are to be staffed with *diplomates* in the three major divisions of medical science.

Such a program will provide adequate medical care for persons within the immediate vicinity of the institution; but these hospitals do not represent, and cannot be, workshops for the general practitioner, and hence will afford no solution to the primary problem of rural medical practice. If we are to support a program of adequate rural medical service supplied by country doctors, we must support equally and simultaneously the program which will provide small rural hospitals in which our country doctors may safely deliver their obstetric cases, provide adequate, immediate, and available hospital care for the acute illnesses of children and adults, and perform those surgical procedures which honestly lie in the field of general practice. Since the practice of preventive medicine is likewise within the realm of the country doctor, it is not unreasonable to request allocation of some public health services to this rural unit described.

I have said that such tiny hospitals are labeled as "sub-standard" by our Medical Care Commission and by the United States Public Health Service. If, in the construction, maintenance, and servicing of such units, we are to be guided by the standards of large teaching hospitals, then for a sixteen-bed hospital we will require a staff of approximately thirty salaried persons. Such a plan is theoretically perfect, but practically unworkable. It would impose a burden of cost upon the patient which could not be met, and should not be expected. It should be realized by those who are attempting to solve our problems of medical legislation that provision of superfluous benefits for the hospitalized farmer will not aid in his complete medical care. The men who seek a country practice are neither so idle nor so foolish as to believe that they can care for 100 per cent of their cases in general practice; but they will justly demand facilities to provide for modern treatment of the great majority of their patients, and these facilities are not being made available under our present system of hospital construction.

The Importance of Medical Legislation in Preserving the Country Doctor

We are faced with the picture of disappearing country doctors. These men are not being replaced, since no twentieth-century physician is willing to practice bad medicine because of inadequate hospital facilities, no matter how urgent the cause. What can we, as members of the medical profession, do about this situation?

For many years, we have delegated the responsibility and the privilege of medical legislation to men whose nearest acquaintance with the actual problems of medical practice was no closer than a university teaching chair or the handshake of a politician. If we are to answer, even in part, our responsibilities to one million persons within this state, we must admit that the burden for the direction of medical legislation lies squarely on our shoulders and our shoulders alone! We must look honestly upon our responsibilities to the great rural population which provides for the prosperity of our state. We must recognize that these people can best be served by an increase in the numbers of rural physicians who can provide them with on-the-spot medical service. We must realize that, unless adequate medical facilities are made immediately available to country doctors, we will soon be without any properly trained rural physicians; and because of this deficit we will have failed in our trust to most of the population of our state. If we resolve as an organized group of professional men to make an honest effort at dictating our medical legislative policy to the end that we might serve the country physician and thus increase his ranks, improve his position, and fulfill our obligation to our people, we must take upon ourselves the burden of enforcing completion of a medical care and hospital construction program which will be aimed directly to the benefit of the country doctor.

I am asking today that we give special consideration to the man who chooses a lifetime of service in rural areas and who asks but one thing, who requires but one solution to his eternal problem—that he be permitted to practice as good a brand of medicine as he was taught in medical school. That brand of medicine can only be practiced by an equal adjustment of home, office, and hospital practice such as we propose to see in this century. If we, as members of organized

medicine, do not insist upon extension of proper and reasonable privileges to the country doctor in the form of available hospital facilities, to be provided by state and federal governments, together with community planning, we are failing in our trust to the population of our state and to that group of practitioners which we now designate as the disappearing country doctors.

The challenge is ours. For the last two decades the challenge has been before us and we have failed to meet it. The time has come to insist upon a sufficient degree of control over medical legislation to permit us to provide adequate hospital facilities for the country doctor, that he may increase in number and improve the lot of our rural population.

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THE ROLE OF THE GENERAL PRACTITIONER IN A PROGRAM OF ADEQUATE MEDICAL CARE

J. STREET BREWER, M.D.

ROSEBORO

In the era of rugged individualism of a century or even a generation or two ago, sickness was a matter between the individual and his doctor, if he had one. But not so today. Within our time, the problem of the sick has become the concern, not only of the individual and his family, but also of the community and state, and latterly, of the national government. The first agency to manifest concern about the problem of sickness and disease was the Church. The Christian Church first sought to relieve distress by providing for the needy sick, and later for the sick individual of whatever social and economic status, by the building of hospitals and public dispensaries. Governmental agencies concerned themselves first about the public health, beginning with the establishment of local health units, which spread to the state and national governments and grew into the splendid program of public health and preventive medicine which we know today.

It is not surprising that, as the success of governmental administration of the public health program became apparent, political leaders began to ask what government could do in the field of curative medicine. While the medical profession accepted, though not without objection, the participa-

tion of the government in the field of public health, it was not ready or willing to do so in curative medicine. The practicing physicians of the land felt that curative medicine was their field and resented the threatened encroachment of a program of socialized and federalized medicine. The line is drawn and the medical profession has dug in for battle.

*Inadequacies of the Present-Day Program
of Medical Care*

The present system of medical practice has brought to the American people the best in medical care that the world has ever seen. We have almost reached the very pinnacle of perfection in technical and professional skill. Research and experiment are bringing forth new techniques and therapeutic agents that are almost unbelievably successful in the relief of illness and the restoration of body function. But it is charged against us that we have failed in the distribution of medical care and that there is a maladjustment and irregularity in its dispensation to the people. That the people are not satisfied is evidenced by the agitation for various plans and schemes for socialized and federalized medicine. On one hand, one hears complaints about the high cost of medical care; on another, that doctors are too scarce; on another, that it is not scarcity of doctors but maldistribution; and on still another, that there is too much emphasis on specialization.

In the face of this criticism and dissatisfaction let us stop for a moment and look at ourselves. We seem to have everything necessary to render perfect medical service. We have the finest surgeons and other specialists in the world. Our hospitals are the most elaborate and best equipped of any in the world. The machinery and apparatus for medical and surgical practice is unsurpassed and is beyond even the dream of most other countries in the world. Why, then, are the people dissatisfied? What need of theirs are we as a profession failing to meet?

For one thing, we are failing to meet the needs and wishes of the common man. We seem to have forgotten that sickness is still an individual and family problem and that most people, in spite of the excellence of our hospitals, had rather be at their own homes, in their own beds, when sick. In our laudable desire to perfect surgical and medical skill and technique we have created a system in which too often we have to bring people to medical service rather than take the skill

of the doctor and his services to them—and the people don't like it.

Let us remember that it is the common ailments of man which concern most people, and which form their basis for judging the adequacy of our service. Few families ever need a bronchoscopist or a brain surgeon. Indeed, most of them rarely need any kind of surgeon; but every family, almost every individual, does need at one time or another a doctor for one or more of the common ailments of man. Few people have trouble finding a doctor to remove an appendix, to operate for a perforated peptic ulcer, or to perform a hysterectomy. But in every town, almost every neighborhood, people have trouble in finding a doctor to visit a sick child, to attend a case of renal colic, to deliver a baby in the home, or to answer a call to a patient with a pain in the abdomen. The pediatrician can't go; he is busy in the well-baby clinic. The internist is busy with a man from the athletic club who wants a complete work-up to find out if there is anything wrong. The obstetrician is doing a cesarean section, and most of the other specialists, if they are not busy, do not make calls in the home or see a patient only by previous appointment. Who then is to go? Who will answer the call? Obviously, the general practitioner and family doctor. But he is in his office, twelve patients behind, and with seven calls ahead when he does go out. This situation, gentlemen, is not exaggerated. It is happening every day in many cities and towns in North Carolina.

*The General Practitioner as the Answer
to Socialized Medicine*

Our profession all over the country is now in the process of taking stock of itself. Read the journals, the newspapers, the reports of the trustees of the American Medical Association. Everywhere we find evidence that the medical profession is taking stock of itself, and none too soon. If we ourselves do not work out and offer to the American people an adequate program of medical care at a price they can afford to pay, the politicians and the reformers are going to take over and attempt to do so through a program of tax-supported and federally controlled medicine. Of course, you and I know that such a program is doomed to failure, but if we do not offer a program that is adequate for the needs and wishes of the people, those

who favor socialized medicine will make the attempt.

I said "adequate for the needs of the people" because our present program does not meet all of their needs. Seventy-five to eighty per cent of the medical needs of the average community can be attended to by any well-trained medical graduate. But for the last quarter of a century we have been setting up a system of medical education and training which would make specialists of most doctors. This system should be changed so that medical education and training would prepare most doctors for the general practice of medicine and to serve as family physicians. The family physician has been and will continue to be the mainstay in any adequate program of medical care. Medical practice in the United States has grown great because it was built around the general practitioner.

Before our time, every doctor was a general practitioner; but as medical knowledge grew and increased and new techniques were discovered, the field broadened and doctors began to give attention to certain things that interested them most. Some liked to operate and so gave most attention to surgery; others were attracted to pathology, and others to the non-surgical field of practice. This development was fortunate, because along about this time there arose a great need in medicine for teachers, men with special training to teach and to head departments in the medical colleges and clinics that were beginning to spring up over the country. The Johns Hopkins Medical School is an example of this answer to need, and this splendid institution, under the leadership of Halsted, Osler, and Welch, began to train men in the various specialties of medicine who went out to head departments in medical schools and to organize and direct group clinics.

Soon, however, almost every school wanted to train men for specialization. The schools forgot that the general practitioner is the bedrock upon which medical practice is built. The pendulum toward specialization swung too far, but now it has begun to swing back. Under the leadership of such men as Johnson and Davison of our own state, and others, an effort is being made to regain lost ground and to establish the general practitioner in his rightful place as the keystone in an adequate program of medical service

that will reach all the people.

The recent pediatric survey made in North Carolina drew attention to the fact that the mainstay of present-day medical service is still the family physician. He provides 75 per cent of all private care given to children. The pediatrician provides 12 per cent, the remaining 13 per cent being given by specialists in other fields. The general practitioner is predominantly concerned with treating the sick. That is his function. The pediatric survey shows that 74 per cent of the time the general practitioner spends with child patients is devoted to existing ailments. The general practitioner is the first line of defense in the fight against disease. Likewise he should be in the first line of offense in a program of preventive medicine.

The present system of medical education and training, in which too many doctors are encouraged to be specialists, is partially responsible for the maldistribution of doctors. Obviously, a young doctor who spends five to seven years preparing for a specialty cannot go to a town of 1000 to 5000 population and expect to make a living. There are hundreds of such towns in North Carolina which cannot support a specialist but which need the services of a good doctor and will pay him a handsome return for them. A large majority of the people of North Carolina live in the rural districts and in small towns and cities. They do not need a medical expert except occasionally. But they do need doctors of good training and common sense who can set a broken leg, reduce a dislocated joint, deliver a baby, treat a case of gallstone colic, and without laboratory aids have at least a fair idea as to whether a case of coma is due to uremia, diabetic acidosis, or brain tumor. Obviously the only doctor who can be expected to do all these things is the general practitioner.

The recent advances in medicine have played right into the hands of the general practitioner in small towns and rural communities. An x-ray machine is now within the financial reach of any doctor who wants to put one in his office, and obviously one does not have to have several years of training in radiology to diagnose a broken bone. With a little study one can soon learn to tell something about tuberculosis by means of the fluoroscope and x-ray; he can tell whether a gallbladder fills with dye, and can see a stone in the kidney or ureter and

bladder. Chemotherapy and the antibiotics have made it possible for the general practitioner to treat and cure a host of infections for which it was formerly necessary to hospitalize the patient, and in which skilled care was required for recovery. Now under the influence of sulfonamides and penicillin these infections melt away almost overnight. Patients with otitis media, mastoiditis, pneumonia, cellulitis, meningitis, pelvic infections, and even osteomyelitis no longer need to see a specialist and usually don't have to be hospitalized.

The well trained general practitioner of the future should care for 85 per cent or 90 per cent of the ailments for which people consult doctors. Let our medical educators and hospital trustees recognize that any adequate program of medical service which can be delivered to the people at a price they can afford to pay must be built around the general practitioner. Then we shall soon see in this country a profession that is regaining the love and respect of the people, and all these fantastic schemes of socialized and federalized medicine will die a-borning.

*How the General Practitioner Can
Fulfill His Role*

Let not the general practitioner develop any sense of self-righteousness, but rather let him re-examine himself and the work that he has done and he will find that he has not been without his faults. He is in a large measure responsible for the trend toward specialization, and in part for the awe and reverence in which the average person holds a specialist. Rather than study a little and work the thing out himself, the general practitioner has too often been content to say to the patient with an unusual or complicated illness, "You had better go to the city and consult a specialist." He has too often neglected to make a thorough examination, an examination which he was entirely capable of doing, but too careless to do. Many times he has missed the boat because he did not make a rectal or vaginal examination in a bleeding man or woman. Too often he has failed to discover diabetes because he did not examine the urine. Too many patients have passed the stage of operation because their family doctor just did not think of brain tumor as a common cause of headache. In obstetrics he has too often employed Pitocin, and has often rushed in where an-

gels would fear to tread. Too many times he has refused to make a night call.

Let the general practitioner of the future stop apologizing because he is in general practice. Let him use his intelligence and his energy and have the interest to study and work out difficult cases for himself, but let him ask for consultations whenever they are needed. Let him remember that it is he who first sees the patient, and that if an appendix ruptures or a peptic ulcer perforates it is he that is at fault and not the surgeon. Let him remember that if foreign bodies in the lung are not discovered before abscess and pneumonia develop, it is his and not the bronchoscopist's fault. Let him highly resolve that, as he is the chief pillar on which medical care is built, he will do all in his power to educate himself and to keep abreast of the times. Then he will be prepared to serve so capably and efficiently that the welfare of the patient may be assured.

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THE ADVANTAGES OF MEMBERSHIP
IN THE AMERICAN ACADEMY OF
GENERAL PRACTICE

FOREST M. HOUSER, M.D.

CHERRYVILLE

When I was asked by the chairman to present this paper to the Section on General Practice, no united effort had been made to establish a North Carolina Chapter of the American Academy of General Practice. At present we have in North Carolina an active chapter which is associated with the national organization.

The American Academy of General Practice was founded June 10, 1947, at Atlantic City, during the meeting of the American Medical Association. It is a national association of general practitioners of medicine and surgery. Although perhaps quite a number of you present are already members of the Academy of General Practice and know the principles of the organization, there may be some who would like to know something more about the organization and what it stands for.

Requirements for Admission

A candidate for membership must be a graduate of an approved medical school and must have had at least one year's rotating internship in an approved hospital. He must be a member of his county medical society

and licensed to practice medicine and surgery in the state of his residence. He must be of high moral and ethical character, must have shown his interest in continuing his medical advancement, and must not limit his practice to a particular field of medicine or surgery. The candidate shall have been engaged in the general practice of medicine for at least three years, although credit has been given for service in the Medical Corps of the armed forces.

Membership as an Incentive to Better Practice

To me one of the main advantages of membership in the American Academy of General Practice is the personal satisfaction of knowing that every general practitioner who is a member is doing all in his power to become a better doctor, and therefore is doing his utmost for the patients on whom he is called to serve. In this connection I cannot help but recall the services rendered by my father, who was a general practitioner; for he, like many of the other general practitioners of the decades just past, was a real doctor of medicine. In close association with my father for many years in my high school, college, and medical school years, I learned to know just how much the family doctor really meant to his patients. The doctor was not only their medical adviser, but often their counselor in matters foreign to medicine.

In my early practice I had quite a bit of the old type of counseling to perform. Lately, however, there has been quite a change in the attitude of patients toward the general practitioner as well as in the attitude of the general practitioner toward the patient. Today we have so many more specialized and specific methods of examination and treatment, and time seems so limited, that we are no longer general counselors to our patients, but limit all of our time and energy to the medical aspect of a case. I am not advocating that we revert to the old way of general practice, but I do believe that we could do a great deal more for our patients if we could regain some of those lost arts of the practice of medicine. And it is in this respect that, in my opinion, we will obtain the greatest good and most advantages from membership in the American Academy of General Practice. As I will tell you later of some of the aims and purposes of the American Academy of General Practice, you will

readily see just what I mean. By having an organization limited to general practitioners we will be able to exchange thoughts, ideas, and experiences which will benefit other members. We will be required to keep abreast of all advancement, should we desire to retain our membership in the Academy.

The main objectives of the Academy are to improve standards and quality in general practice. Its purposes are set forth in the Constitution of the Academy as follows⁽¹⁾:

- "1. To promote and maintain high standards of the general practice of medicine and surgery.
- "2. To encourage and assist young men and women in preparing, qualifying, and establishing themselves in general practice.
- "3. To protect the right of the General Practitioner to engage in medical and surgical procedures for which he is qualified by training and experience.
- "4. To assist in providing Post Graduate study courses for General Practitioners, and to encourage and assist practicing physicians and surgeons in participating in such training.
- "5. To advance medical science and private and public health."

Membership as a Protection against Encroachment on the Rights of the General Practitioner

The Academy also has as its aim the concentration of effort on the part of the general practitioner, to provide security against invasion and intrusion by any outside group which may attempt to determine the policies for general practitioners. The organization serves as a medium to rivet the loose ends of general practice, and as an agent to protect, defend, and safeguard the practitioner against all opposing forces⁽²⁾.

Furthermore, the Academy will do all in its power to assure that every competent general practitioner will be privileged to hospitalize any of his patients who require hospital facilities, and it will oppose any hospital regulations which confine staff membership or the right to perform certain medical and surgical procedures to specialists who have been certified by the respective specialty boards. The Academy plans to work in close harmony and cooperation with the American Medical Association, the Council on Medical Education and Hospitals, and other councils and bureaus of the American Medical Association⁽³⁾.

1. The Constitution of the American Academy of General Practice.
2. The American Academy of General Practice News Letter of January, 1948.
3. An Introduction to the American Academy of General Practice.

Membership as Certification for General Practice

At present there is no certifying board to examine general practitioners, but for the general practitioner membership in the Academy corresponds to a certification by a board for the specialist⁽³⁾.

Conclusion

The Academy expects to increase the quality and raise the standards of general practice by encouraging general practitioners to pursue graduate study and to attend regular medical society meetings, hospital staff meetings and other related meetings; and by establishing a standard toward which general practitioners will be expected to strive⁽⁴⁾.

Discussion

Chairman Moss: This concludes the planned part of our program and I'm going to ask Dr. Davison to open the discussion.

Dr. W. C. Davison (Durham): I have heard many panel discussions on general practice, but never a better one than has been presented to us today. We are to be congratulated on having had this careful delineation of the problem. At present, 53 per cent of the doctors in this country are, or claim to be, or are training to be specialists, and yet an analysis of a family doctor's practice will demonstrate that less than 15 per cent of patients need a specialist. I realize that the medical schools probably are as much to blame as anything else for this low percentage of general practitioners. More medical schools should follow Dr. Wingate Johnson's example at the Bowman Gray School of Medicine of Wake Forest College in having a course in family practice for third- and fourth-year students, in which the common problems encountered by physicians in caring for patients at home are discussed and illustrated by actual case histories. Our school hopes to encourage more students to go into rural practice by arranging with family doctors to serve as preceptors for students who wish to spend two weeks in general practice during their senior year—a plan which has been tried in California. I am grateful to Dr. Amos N. Johnson and Dr. J. Street Brewer for their assistance in this program. The seniors who have spent two weeks with them are enthusiastic about general practice.

As you know, one of the greatest problems in medical care is the dearth of rural general practitioners. City students rarely will practice in the country; therefore the most effective means of meeting this problem is the enrollment of more country students in medical schools. Unfortunately, at present there are too few. A recent national survey of 6,011 first-year medical students revealed that only 12 listed an address on a rural route; yet nearly half of our population is rural. One of the reasons for this lack of rural students is that graduates of rural high schools often are so poorly prepared that they have difficulty in making satisfactory marks in the premedical course in college. Admission committees of medical schools are anxious not to admit

students who are likely to fail, and experience has shown that students who have made poor college records usually have difficulty in medical school. I believe that a tutoring program for students of rural high schools would enable them to have satisfactory college records, so that the admission committees of medical schools would have no hesitancy in admitting them.

Equally important, as Dr. George F. Bond has so ably showed, is the need for hospital facilities in rural communities. A five- to fifteen-bed clinic with an x-ray machine and a laboratory technician will, as Dr. Bond said, make twentieth-century medicine practical in the country.

I also believe that the new Academy of General Practice, with its high standards and enthusiasm, will make this field more attractive for young graduates. Too many of them, at present, have the erroneous idea that general practice is something that specialists didn't want.

Dr. M. A. Bowers (Winston-Salem): I practice in the city. One of our problems is that the people have been educated to such an extent that they think the only doctors worth anything are the specialists. I don't get as many night calls now as I got a few years ago, and I think the other general practitioners will say the same thing. People start out to call a specialist, and when the specialists won't go, they give up and say they can't get a doctor. The medical profession gets criticized because people can't get doctors at night, yet it is the people's fault. How are we going to get the public to realize that their key men for medical care should be general practitioners?

Chairman Moss: Thank you, Dr. Bowers. I believe that your question comes within the realm of Dr. Brewer's paper, and I'm going to ask him to try to answer your question.

Dr. Lester Crowell (Lincolnton): I firmly believe that a great many doctors, as Dr. Bond pointed out, would be willing to go into the areas where medical service is needed if they had the proper workshop to work in. I have tried to find out what is holding up the expenditure of funds by the Medical Care Commission in the places where they are most needed—that is, in the rural districts. I believe the trouble is that the standards set up by the United States Public Health Service are too elaborate for the needs of the physicians practicing in the rural areas. I think that something ought to be done to overcome that obstacle, or else the wrath of the American people will descend on the medical profession unjustly.

Chairman Moss: Thank you, Dr. Crowell. Dr. Brewer, I believe, is ready to attempt to answer one of the questions.

Dr. Brewer: When you bring up the question of the public's responsibility for cooperating with the general practitioners in the program of medical care, you've opened up a big field. The public bears a large share of responsibility in this thing. Not only do they demand specialists; they want to get their medical care, as well as their shoes and hats, in a larger town than the one they live in. If they live in my town, they want to go to Raleigh; if they live in Raleigh, they want to go to Richmond.

What are we going to do about it? One thing we can do is to take every opportunity to speak on medical care before civic clubs and other organizations. We general practitioners might also speak to the members of the Public Relations Committee of the State Medical Society. They might do something to teach the people what kind of doctor to call when they get sick.

I want to say one other thing regarding the question of building hospital facilities in small towns

4. An Invitation from the American Academy of General Practice.

and communities. Being a member of the Medical Care Commission, I'm very keenly aware of the problem. As has already been pointed out here, the smaller towns can't build these clinics according to the standards set forth by the United States Public Health Service. They are too high. What can you do about it? You can do a lot about it. Write the Surgeon General of the United States Health Service. See your congressman and tell him the standards are too high. Write Senator Hoey and Senator Umstead. If the standards are to be lowered, it will have to be done in that way, and I think it is a very effective way for approaching this problem and remedying it.

Dr. Amos N. Johnson (Garland): I am on the Public Relations Committee appointed by the Medical Society. We have discussed all these matters and many more in regard to our relationship with the public, and we hope to get over a program which will become better from year to year. If you gentlemen will help us to get an appropriation adequate to get something done, we'll certainly try to take care of this problem and others.

EPILEPTIC SEIZURES EASILY CONFUSED WITH FUNCTIONAL MENTAL DISORDERS

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WINSTON-SALEM

During the past thirty years, and in conjunction with a growing understanding of the psychopathology of mental disease, there has been an increasing tendency for the fields of psychiatry and organic neurology to draw apart. Progressive psychiatrists, concerned more and more with psychobiology, have felt in many instances that their work was hampered and limited by strict concern over the anatomic basis of mental symptoms. Furthermore, it has become increasingly evident that the relationship of psychiatry to neurology is in many ways little closer than its relationship to other specialties such as gastroenterology, cardiology, and gynecology. The close interrelationship between mental and physical disease has become clearly apparent, and the part which psychiatry must play in the understanding of disease has thus become well established.

In connection with this trend—which has been such a favorable one for psychiatry and, in fact, for all of medicine—there has been an unfortunate tendency on the part of some to feel that one can consider the mind as separate from the brain, and to overlook the fact that one cannot have mental function without a nervous system in

which the mental processes take place. The fallacy of this point of view is most strikingly apparent when one considers those patients whose mental symptoms are found to be closely related to organic brain disease. Cases of this sort lie on what may be thought of as the borderland of neurology and psychiatry. In such patients the symptoms of brain disease manifest themselves as mental ones, distinguished with difficulty from functional disorders of the psyche.

Cases of this sort are important from several points of view. For one thing, they frequently require medical or surgical therapy; and for this reason, it is essential that they should be recognized and treated early. Apart from this purely practical aspect, such cases are important because of the knowledge which they may give us concerning the nature of mental activity. We know all too little of the functional processes which underlie such mental functions as memory-recall and association; yet disorders of these functions make up a large part of a psychiatrist's practice.

Case Reports

With these facts in mind, I wish to present the following cases of epilepsy in which mental symptoms predominated. Some of the abnormal behavior of these patients resulted from pathologic overactivity of a part of the brain.

Case 1

A 56-year-old man complained of fainting attacks and periods of lapse of memory. His past history is as follows:

At the age of 10, the patient had rheumatic fever, followed by chorea which lasted several months and cleared up without residual symptoms. He had no other childhood illness of significance. After finishing high school, he started taking a course of training in criminology. He had hoped to complete a four-year college course, but his finances were limited and he was forced to discontinue his training after eighteen months. This was a great disappointment to him, as he had hoped to enter government service. Instead, he was forced to take a position with a private detective agency, where he worked for seven years.

The patient stated that during this period of time no one except his employers knew the nature of his employment—not even his wife. In order for him to carry out certain types of work, it was necessary for him on several occasions to appear to have been guilty of misdemeanors. These situations were difficult to explain to his wife. Furthermore, his work required him to stay away from home for long periods of time in other cities. On one occasion, he returned unexpectedly from such a business trip and found his wife in the company of one of his good friends. This discovery was a severe shock to him, since he had always been faithful to her. He was undecided what to do for some period of time;

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he finally decided to forgive her, and a reconciliation was effected. Shortly after this occurrence the patient decided that it would not be advisable for him to continue as a private detective, and he obtained a clerical job in a stationery store in a large city. He continued this work for twenty years, for the last ten years of which he held a rather responsible position as manager of the store.

At the age of 47, he had his first episode of unconsciousness. To the best of his knowledge, he had not been disturbed by any unusual circumstances and was emotionally at ease. He was sitting in the store having a quiet lunch, when suddenly, without warning, he lost consciousness. He did not know what happened, but he regained consciousness an hour or so later in a doctor's office. Attacks of this sort had recurred on three or four occasions since that time. It had never been ascertained whether these were fainting spells or convulsions. Although the patient continued to work for about a year after the first attack, there was a change in his disposition. He became irritable, his judgment could not be relied upon, and it was eventually necessary for him to be retired from his position as manager of the store.

From that time on, there was a gradual and progressive change in the patient's personality, characterized by unreasonableness, outbursts of temper, and depression. In addition, starting at about the age of 53, the patient began having lapses of memory which were distinct from his generalized attacks. A typical attack was described by the patient somewhat as follows: "A feeling of faintness came over me, as though I could see you, but I could not know where I was or who you were. This feeling lasted for a little while, maybe about five minutes, and then it faded away; but after that, I couldn't remember my name or my wife's name, or even very much where I was. In about an hour, these things came back to me and then I felt just as well as ever."

Attacks of this sort occurred several times a week, usually lasting for about fifteen minutes. In addition, the patient was known to have had at least three episodes of paroxysmal tachycardia. These episodes had usually occurred at times when the patient was nervous or disturbed. However, examination appeared to indicate that it was a true tachycardia, and the cessation of the attack was abrupt in character. The patient also complained of his own unreasonable behavior. One day he walked into a candy store, and was having some difficulty in selecting the particular brand of candy which he wanted to take with him. The clerk did not seem to be very much interested in helping him with his selection. Finally he became angry and said to the clerk, "If you can't take better care of your customers than this, I'm not going to deal with such a low-grade store any more." He then stamped out of the store. Afterwards, he said to himself, "Paul, what a fool you made of yourself!"

On examination, the patient appeared to be about his stated age of 56. His mood was generally one of depression. He showed a high degree of irritability and tension in discussing some of his difficulties and in response to his immediate surroundings. A number of strong emotional trends were discovered during the course of a series of psychiatric interviews. It was evident that the patient still harbored a great deal of resentment toward his wife for her unfaithfulness to him, which had occurred nine years prior to the examination. Although superficially he had forgiven her, it was obvious that in speaking of the incident he was emotionally disturbed, occasionally weeping and appearing extremely tense. The patient also evidenced strong

hostility toward his father. He indicated that his father had been a strict disciplinarian and had never provided the patient with the necessities which he required; he had, in fact, failed to assist him in obtaining an education which would have made it possible for him to follow his desired career as a federal detective. In his more immediate surroundings, the patient had had bitter controversy with his landlord, with his neighbors, and even with the people in his church who had been providing him with some of the necessities of life.

On the basis of these findings and because of the highly emotional coloring of the patient's seizures, it was thought at first that the disturbance might be purely functional in character. Further study, however, revealed some definite intellectual defects. The patient's memory was poor for recent events. He had difficulty in recalling the ages of his children, or the events which had taken place within a few days prior to the examination. He was poor in mathematics, having difficulty in subtracting sevens from one hundred. The patient was very much disturbed when he discovered this to be the case, remarking that he had been an honor student in mathematics at school. On the basis of these findings, an electroencephalogram was carried out. The tracing showed clear-cut abnormality centering in the frontal lobes and characterized by the presence of slow wave discharges and occasional epileptiform spikes.

The patient was given phenobarbital, 1 grain three times a day, and Dilantin, $1\frac{1}{2}$ grains twice a day. On this medication, there was a striking change in his condition. He ceased having the generalized seizures, which had been rather infrequent, and also the attacks of loss of memory, which had been occurring several times a week. For a period of four months following the institution of therapy, he was completely free of any seizures. With the disappearance of his seizures, his irritability and depression were greatly improved, although the underlying deficiencies of judgment and intellect did not show any change. The patient was continued on this medication for a period of approximately six months. At the end of this time, there was a recurrence of occasional minor attacks. In addition, increasing intellectual deterioration became apparent, and eventually confinement in an institution became imperative.

It is felt that this patient represents an example of presenile dementia, with the onset characterized by minor epileptiform seizures arising either in the frontal or temporal lobe and characterized by mental disturbances easily mistaken for functional disease.

Case 2

A married white woman, 27 years old, complained of staring spells and convulsions. The onset of her illness occurred when she was 18 years old and had returned home from college for the Christmas holidays. The first attack came on after a dance. At about 11 o'clock in the morning her mother found her staring in front of a mirror, immobile and unresponsive. The patient's face was flushed and her eyes looked blurry. After being led to bed, she looked at her watch and asked what time it was. She seemed to come to in about ten or fifteen minutes, but had complete loss of memory for the attack. A doctor attributed the attack to overwork.

After the patient returned to school she had two or three attacks in which she went blank. She was brought home from school, and her family physician saw her in one of the spells. When she obeyed some of his commands, he was convinced that she was malingering or hysterical. She was advised to discontinue college and was kept busy at home for a

year or two.

When the patient was about 20 years of age, she was taken to a local hospital, where she was advised to get away from home, be on her own, and work. The patient went to another town to be with relatives and to work, but the attacks continued. After a few months she returned home, where a psychologist attempted unsuccessfully to hypnotize her. He made another attempt to induce hypnosis with the use of alcohol, but this too was unsuccessful. The next morning, just before breakfast, the patient had her first major convulsion. Her mother said that she was in a state of coma for the rest of that day. The following day, she was dull and listless, and late that night she had her second major convulsion. A clear description of the convulsion was not obtained. At this time, the patient was sent away to a well-known psychiatric hospital, where she remained for eight months.

Physical examination at the time of admission to that hospital was said to be essentially negative, except for a congenitally malformed left external auricle, marked lower right mimetic facial weakness, and questionable intention tremor on each side. Laboratory studies, including examination of the cerebrospinal fluid, x-ray of the skull, and examination of the visual fields, were normal. An electroencephalogram revealed bursts of slow waves and was interpreted as showing an epileptic pattern. A second electroencephalogram, carried out two weeks after Dilantin therapy was begun, did not show much change except a little less sensitivity to over-ventilation.

A number of striking psychologic factors in the patient's history were elicited during a course of psychotherapy. It was found that, although the patient had always felt a great deal of respect and comradeship for her mother, there was underlying this a deep feeling of resentment for the rather domineering attitude of the mother and for the rivalry which the mother unconsciously exerted in respect to the patient's boy friends. She complained that her mother had wanted her to mix with a class of people with whom she felt uncomfortable, and that she frequently courted the patient's boy friends. The patient expressed resentment over the fact that she had been sent away from home when she began to have the attacks, and presumed that it was because her family was ashamed of them. In addition, the patient told of several embarrassing sexual episodes in relation to her grandfather and her father, although none of these episodes appeared to be of any magnitude.

While in the hospital, the patient had occasionally felt dazed, and would carry out apparently unconscious activities. She did not have any major convulsions. She repeatedly requested that she be given further x-ray studies and that she be more completely hypnotized, in order that the effects of her previous partial hypnosis might be eliminated. Under the course of psychotherapy, the patient gradually improved and developed some feelings of independence, not only from her family, but also from the personnel in the hospital. A position as stenographer was eventually obtained for her, and although she was somewhat apprehensive about leaving the institution, she finally made the move. There is no mention in the hospital report that the patient was advised to continue the Dilantin therapy on which she had been placed during her period of hospitalization. She was advised that her difficulty was psychiatric in nature and that her electroencephalogram did not show anything. It was also the impression of the family that the patient suffered from a psychiatric disorder.

Three years later, the patient was seen by Dr.

Lloyd Thompson at the Bowman Gray School of Medicine. Her condition had remained relatively unchanged until a week or so prior to that time, when she had had a series of major convulsions. She felt that these had been precipitated by the emotional strain incident to her recent marriage and move to a new city. According to the patient's husband, three convulsions had occurred between midnight and 6 in the morning on the night before admission. In these attacks, which were described as typical convulsions, she bit her tongue very badly and was incontinent of urine.

Upon reporting to the clinic, the patient complained bitterly of mental disturbances. She indicated that it was extremely embarrassing to her not to be able to remember her address, the names of her friends, or many of her surroundings. She felt confused most of the time and suffered from a dazed feeling which interfered with concentration. She felt strange in her new community, often failed to recognize new acquaintances, and on several occasions could not find her way home. She indicated that she was continuing to have frequent minor attacks in addition to the generalized seizures outlined above. Frequently the minor attacks would be preceded by a peculiar metallic taste in the mouth. Usually the attack was ushered in by a feeling that something horrible was about to happen. The patient had the feeling that she was in familiar yet strange surroundings. This feeling usually lasted for only a few seconds, then the patient would lose consciousness.

Physical examination at this time showed essentially the same findings previously reported. In view of the fact that a number of attacks had occurred when the patient had been fasting, the possibility of hypoglycemia was entertained. A glucose tolerance test showed a fasting blood sugar level of 86 mg. per 100 cc.; one hour after the administration of glucose the level was 104; two hours, 84; three hours, 83; five hours, 72; seven hours, 78. When the blood sugar was 72, the patient complained of slight feelings as though she were going to have an attack, but none developed. She was put on a hypoglycemic regimen consisting of a high-protein, low-carbohydrate diet with frequent feedings. She showed some improvement, but continued to feel slightly confused and to have occasional trance-like episodes. Medication with phenobarbital was then instituted and has been continued for six months. The patient receives 1 grain at morning and at noon, and 1½ grains at night. She has been completely free of all major or minor seizures for a period of four months and has indicated tremendous improvement in her mental outlook. She is no longer nervous or apprehensive, and feels that her mind is clearer than it has been for many years. She is convinced that there has been a dramatic change in her condition.

Coincident with this change, the patient has become pregnant. For this reason it is not possible to state conclusively that the administration of phenobarbital alone is responsible for the great sense of well-being which the patient now experiences. In retrospect, however, there is strong reason to feel that this patient, who for many years has been considered to be primarily a psychiatric problem, has in fact been suffering throughout this time from minor epileptic seizures of psychomotor character, probably arising in the temporal lobe. The aura of a metallic taste and of a peculiar feeling of disorientation, and the postictal state of memory loss and confusion are characteristic of Jacksonian seizures arising in this area.

We feel that this case offers a striking example of those in which psychic disturbances are in part

direct manifestations of epilepsy, and in part a secondary reaction of the patient to her organic illness.

Case 3

A 21-year-old college student was referred to the hospital because of attacks of unconsciousness and peculiar behavior. His first seizure occurred approximately two years prior to admission. The most recent attack had occurred a few weeks prior to hospitalization, while the patient was attending class. Shortly after the lecture started, he rose from his seat, stood up in the aisle, and started to remove his clothes. After taking off his trousers, he grasped them by the cuffs and looked around as if searching for some object on which to hang them. When none was apparent, he dropped them on the floor and started to remove his shirt. After fumbling with the buttons for a few minutes, he seemed to become somewhat confused and looked around as if he did not know where he was. In the meanwhile the lecturer, although somewhat nonplussed by the procedure, had continued with his lecture. The patient's roommate went over to him and said, "Come along, Bill; it is time to put your clothes on and sit down here and attend your lecture." Thereupon the patient was induced to put on his trousers and sit down in his seat. A few minutes later, he started to take notes. The entire incident probably occupied from about ten to fifteen minutes. At the end of the lecture the patient had no recollection of the incident, and it was difficult to convince him that anything out of the ordinary had taken place.

The patient had had two other somewhat similar episodes. On one occasion when he was riding with some friends, he reached over without warning and started to open the door next to him. The driver hastened to stop the car, and the patient stepped out and started to run across the fields adjacent to the highway. He ran for a distance of possibly half a mile, then suddenly stopped and looked around him with a dazed expression on his face. When his companions reached him he appeared somewhat confused; he did not know where he was or how he had gotten there and had no recollection of having raced across the fields. He was led back to the car, and within a short period of time he appeared normal.

On the third occasion, the patient had been studying in his room, when he suddenly began putting on his tuxedo. He got himself dressed and was on the point of leaving the room when his companions, being alarmed at his behavior, decided to stop him. They left the room and locked the door. When the patient discovered that the door was locked, he became violent and tried to break the door down with the furniture. This disturbance lasted for a period of possibly five minutes. At the end of this time he quieted down, and when the friends reentered the room he had no recollection of anything which had taken place.

Physical examination of the patient did not reveal any abnormality. An x-ray of the skull and a lumbar puncture were reported normal. An electroencephalogram revealed a relatively inactive focal epileptic discharge arising from the left temporal lobe.

Comment

In looking over the 3 cases which have just been reported, one is impressed by the fact that there is nothing particularly unusual about them. Patients with epilepsy frequently present similar pictures. Both of the first two patients, however, were treated

for long periods of time under the belief that their illness was purely functional in character.

As was pointed out above, the psychic disturbances manifested by patients with epilepsy are probably based on two factors. The first is the actual disturbance of brain function occasioned by the abnormal epileptic discharge. The mechanism by which the epileptic discharge produces emotional and mental abnormalities is by no means clear. It has recently been demonstrated, however, that active lesions in the frontal lobe cause far more disturbances of the personality than occur in the same individual when the entire frontal lobe containing the active focus has been removed. It is evident that the epileptic discharge itself produces abnormal mental activities which distort the person's behavior patterns. This type of mental disturbance is most striking in patients with lesions in the frontal lobe or temporal lobe.

The temporal lobe lesions are frequently recognizable by the aura which precedes them, consisting of a metallic taste in the mouth, a peculiar feeling of unreality, a period of dizziness, disturbances of orientation in which individuals or objects appear to recede or approach the patient, the feeling of familiarity or strangeness, or in many instances the occurrence of a peculiar dream or vision. Frontal lobe lesions are less likely to be preceded by an aura. The attack may come on without warning, and the disturbance is frequently associated with marked disturbances of behavior.

Closely related to the effects of the seizure itself is the confusion state which develops after the seizure is over, and presumably is a result of fatigue or relative anoxia of the previously active area. On this basis probably depend the confusion states, the periods of amnesia, and the occasional postictal furors which are observed in patients with focal lesions. The distinguishing features which serve to indicate the epileptic nature of these mental disturbances are the episodic character of the mental aberration and the occurrence of partial or complete impairment of consciousness. The appearance of generalized seizures in addition to the minor or *petit mal* type of attack is an additional clue. The diagnosis can usually, but not always, be confirmed either by electroencephalogram or by the response of the patient to therapy with Dilantin and phenobarbital.

The mental disturbances described above are the direct result of an active epileptogenic focus in the brain. Of equal importance psychiatrically is the disturbance of personality which occurs as a secondary result of the patient's convulsive disorder. A great emotional problem is experienced by the individual who suffers from peculiar and mysterious attacks of the sort described above. Such patients are misunderstood by their families, all too often by their physicians, and always by themselves. They suffer from a mysterious ailment which they themselves cannot understand, and for which they may receive little sympathy. If they suffer from major attacks, their problem of adjustment is made even more difficult by reason of the social ostracism which they suffer because of their disease.

It is apparent that these patients present a two-fold problem lying in the realm of both psychiatry and neurology. It is easy to criticize the psychiatrist who attempts to cure an epileptic patient by wrestling with a mother fixation. Equally to be censured, however, is the neurologist who gives the patient phenobarbital and Dilantin, but fails to cope with the social and psychologic adjustments with which the patient is faced.

Patients of the type presented above emphasize again the fact that, in treating any diseased individual, one is not dealing with a single aspect—be it body, brain, or mind—but rather with the entire personality. Only by a recognition of this important fact can maximum therapeutic effectiveness be achieved.

Education for general practice.—We must revise our thinking about the general practitioner and especially prepare him for his job. He should not be a family doctor because he was unable to secure specialist training in some one field, but because he wished to follow that field of medicine, and he should be especially trained for the job. More emphasis should be placed on general practice in our medical schools. A reasonable portion of teaching of students should be done by successful general practitioners. Some medical schools are attempting to secure preceptorship for their students, during their junior year vacation, with successful general practitioners. This type of education should be encouraged.

The intern preparing for general practice should have a well-rounded rotating internship, and should be permitted to gain more experience in the procedures that he will be called upon to do frequently in his practice. Already some hospitals have established a two-year training program in general practice. More hospitals should offer such a program.—Cleon A. Nafe: *The General Practitioner*, J. Indiana M. Assoc. 41:820 (August) 1948.

THE PLACE OF BCG VACCINATION IN THE TUBERCULOSIS PROGRAM

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McCain

Tuberculosis, or consumption, has plagued mankind for many centuries, and the search for a means of providing immunity against this disease has brought forth many and varied efforts. But since the discovery of the tubercle bacillus by Koch in 1882 many of these attempts have been very specific and have tied in with the tubercle bacillus and its products.

Early Attempts to Produce Immunity

Of all the efforts made to date none has met with any success except those which have involved the inoculation of living tubercle bacilli into the animal body. Trudeau⁽¹⁾ in 1897 infected guinea pigs with a strain of tubercle bacillus which he had isolated several years before from a man with miliary tuberculosis. The strain had produced the usual lesions and death in experimental animals for several years after its isolation. During its life in culture, however, it lost its capacity to produce progressive disease and death but retained its capacity to infect the animal with histologic tubercle. Therefore, when Trudeau inoculated animals with his attenuated strain (so-called R-1), he discovered that they developed localized lesions which did not spread and that the animals became sensitive to tuberculin. Then he infected these animals, and normal controls, with virulent tubercle bacilli, later to discover that the previously infected animals fared better, lived longer, and showed much less tuberculosis when examined at autopsy than the controls did. This fundamental experiment laid the groundwork for much of the very extensive study in immunity that has followed in the wake of this first demonstration.

Several times since Trudeau's basic and fundamental demonstration, experimenters have had recourse to the use of living bacilli in an effort to produce immunity. Some have used other strains of *Mycobacteria* that were virulent for certain species but not virulent for the species inoculated. Still others have

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1. Trudeau, E. L.: Remarks on Artificial Immunity in Tuberculosis, *Brit. M. J.* 2:849, 1897.

used virulent tubercle bacilli in animals, and one or two hardy souls have injected these into man. Others have used saprophytic acid-fast bacilli in an effort to produce immunity. Some of you will remember the Friedmann⁽²⁾ fiasco which dealt with acid-fast bacilli isolated from a turtle and claimed to confer immunity on human beings. None of these studies has stood the test of time and analysis—that is, none except Trudeau's basic work.

The Development of BCG

In 1906 Calmette, a French observer, isolated a strain of bovine tubercle bacillus from cow's milk. He grew this strain in the laboratory on certain media and observed after many transplants that the strain could no longer produce progressive disease. In 1921, or fifteen years after the isolation of the bacillus, this strain was used in animals and later in man in an effort to produce protection against tuberculosis. This strain, bearing the term BCG (Bacillus Calmette and Guérin) has now become well known throughout the world as an immunizing agent. When first used, the strain was administered by mouth. It was given to newborn babes who were required to live in a tuberculous milieu. Calmette claimed that these children became tuberculin positive within the first several weeks after the administration of BCG and that their experience with tuberculosis was much more favorable than had been the experience of other children in similar circumstances in the past.

The strain came to be used much more extensively in the several years following 1921, but the claims were without reliable statistical support. Calmette and his associates⁽³⁾, Weill-Hallé and Turpin⁽⁴⁾, and the general practitioners of France administered BCG by mouth to several million children during the decade following the introduction of the substance. It was obvious that, when administered in this manner, the vaccine conferred some degree of protection, and this without a single instance of death attributable to the inoculation. Such a performance naturally enlisted the interest of people throughout the world, with the result that in the Scandinavian countries BCG vac-

nation has become almost the rule. In other European countries it is used extensively. Its use is now becoming more widespread in Great Britain and the nations of the British Empire, as well as in the United States.

Recent Reports on the Efficacy of BCG

Some who receive BCG vaccination develop tuberculosis, and some die from the disease. The efficacy of the vaccination depends upon a good many factors. One of the most important of these is the possibility of exposure just before or just after the vaccination, with the consequent risk of having a natural infection develop as a complication. The patient's living conditions, the degree of his subsequent exposure, the state of his so-called natural resistance, his general physical condition—all of these factors and undoubtedly many others contribute, or may contribute, to determining the efficacy of the protection.

Nevertheless, the proportion of patients developing tuberculosis in the inoculated and control groups has been surprisingly constant in many of the reports. In Norway, Heimbeck⁽⁵⁾ found practically twelve times as much tuberculosis among the nurses who did not get BCG vaccination as among those who did receive it. In this country, Kereszturi and Park⁽⁶⁾ showed in a fairly small group of children that the degree of protection was very great. Rosenthal⁽⁷⁾, working among the children of Chicago, reported seven times as many deaths in the non-vaccinated as in the vaccinated groups. Ferguson⁽⁸⁾ in Saskatchewan resorted to BCG vaccination among nurses in general hospitals and sanatoria, with the result that the morbidity from tuberculosis was only a fourth as great in the vaccinated as in the non-vaccinated group. Aronson and his associates⁽⁹⁾, working among the Indians in Alaska and the southwestern part of this country, have

5. Heimbeck, J., quoted by Ferguson (8).

6. Kereszturi, C. and Park, W. H.: (a) Oral Vaccination with BCG on Human Beings in New York City, *Am. Rev. Tuberc.* 20:297-311 (Sept.) 1929; (b) Use of BCG Vaccination against Tuberculosis in Children, *Ibid.* 34:437-455 (Oct.) 1936.

7. Rosenthal, S. R., Leslie, E. I., and Loewensohn, E.: BCG Vaccination in All Age Groups, *J.A.M.A.* 136:73-79 (Jan. 10) 1948.

8. Ferguson, R. G.: BCG Vaccination in Hospitals and Sanatoria of Saskatchewan, *Am. Rev. Tuberc.* 54:325-339 (Oct.-Nov.) 1946; also *Canad. J. Pub. Health* 37:435-451 (Nov.) 1946.

9. (a) Aronson, J. D., Parr, E. I., and Saylor, R. M.: BCG Vaccine; Its Preparation and Local Reaction to Its Injection, *Am. Rev. Tuberc.* 42:651-666 (Nov.) 1940; (b) Aronson, J. D., Parr, E. I., and Saylor, R. M.: Specificity and Sensitivity of Tuberculin Reaction Following Vaccination with BCG, *Am. J. Hyg., Sect. B* 33:42-49 (March) 1941; (c) Aronson, J. D. and Palmer, C. E.: Experiment with BCG Vaccine in the Control of Tuberculosis among North American Indians, *Pub. Health Rep.* 61:802-820 (June 7) 1946.

2. Friedmann, F. F.: Die Friedmannsche Therapie und Prophylaxe der menschlichen und tierischen Tuberkulose, *Berlin Klin. Wchnschr.* 75:701, 1920.

3. Calmette, A., Guérin, C., Boquet, A. and Nègre, L.: La vaccination préventive contre la tuberculose par le B.C.G., Paris, Masson and Cie, 1927.

4. Weill-Hallé, B. and Turpin, R.: Premiers essais de vaccination anti-tuberculeuse de l'enfant par le bacille Calmette-Guérin (BCG), *Bull. et mém. Soc. med. de, hop. de Paris* 49:1589-1603, 1925.

conducted unusually well controlled experiments over the last eleven years in which several thousand Indians have received BCG; records were also kept on an equal number of quite comparable people in the reservation who served as controls. Their results indicate that there were seven times as many deaths from tuberculosis among the non-vaccinated controls as among the vaccinated Indians—28 deaths in the control group to 4 in the vaccinated group.

Recently Levine and Sackett⁽¹⁰⁾ have reported the results of a long-term study on children vaccinated in New York and followed for five to sixteen years. They claim that certain errors have crept into much of the work previously done. According to these workers, the chief errors have centered around the method of choice of control cases (when, indeed, controls have been used at all). Their studies indicated that about six times as many deaths occurred in the control groups as in the vaccinated patients when the controls were selected by individual physicians. After alternate selection was instituted, the number of deaths in the two groups was the same. It is their contention, therefore, that no substantial, statistical proof of benefit from the vaccination exists.

Nevertheless, there can be little doubt from the reports cited above and from much additional evidence that BCG confers a considerable degree of protection against morbidity and mortality from tuberculosis. How complete the immunity is, how long it lasts, to whom it should be applied, what are the many factors concerning the best way to apply it—all these are questions that remain unanswered. One thing, however, is certain: that is, that among the many millions of people who have now received BCG not one account of death from the vaccination has been recorded. The now famous Lübeck disaster created a great deal of attention and consternation when more than 60 deaths followed the inoculation of 130 to 140 children with a vaccine which was supposed to be BCG, but was actually a strain of virulent tubercle bacilli. This accident simply represented carelessness in a laboratory, and should scarcely be described in connection with the use of BCG. It is still proper to assume that its administration is safe.

Duration of Immunity

It is not known how long the protection lasts. Several studies have indicated that it has a duration of many years. In 1938 Anderson and Belfrage⁽¹¹⁾ in Sweden reviewed the records of 838 persons who had been vaccinated with BCG ten years earlier, and found that 96 per cent of them had a positive tuberculin reaction. They indicated that there was no essential difference in the reaction of those members of the group who had lived in surroundings free from tuberculosis and those who had been surrounded by tuberculosis. Rosenthal⁽⁷⁾ reported that, in children who had been vaccinated at birth, a retest with tuberculin at 3 to 4 years gave a positive reaction in 92.8 per cent; at 6 years, 80 per cent reacted. He reported also that 88 per cent of student nurses vaccinated at induction into training still had positive reaction upon graduation.

It is true that a person who becomes positive to tuberculin after receiving BCG may become infected from his surroundings, and that this naturally acquired infection may be responsible for the continuing positive tuberculin reaction. It is unfortunate, therefore, that the tuberculin reaction is the only objective test for determining the duration of BCG sensitization.

Preparation and Technique of Administration

Attention should be given to the preparation of the vaccine. In view of the fact that its use will doubtless be limited, one may presume that its manufacture will make but small appeal to the pharmaceutical houses and that it will probably have to be produced by the government or under government auspices. This is as it should be because the vaccine should be under very explicit control both as to its preparation and its application.

The technique of application is well worked out, and the product is applied by either single or multiple inoculation. The average dose of BCG introduced into the skin by single inoculation is 0.05 mg. The multiple puncture method, introduced in 1939 by Rosenthal⁽¹²⁾, consists in making numerous punctures into the skin through a drop of vaccine. An improvement over this tech-

10. Levine, M. I. and Sackett, M. F.: Results of BCG Immunization in New York City, *Am. Rev. Tuberc.* 53:517-532 (June) 1946.

11. Anderson, H. and Belfrage, H.: Ten Years' Experience of B. C. G. Vaccination at Gothenburg, *Acta paediat.* 26: 1-11, 1939.

12. Rosenthal, S. R.: The Multiple Puncture Method of BCG Vaccination, *Am. Rev. Tuberc.* 39:128-134 (Jan.) 1939.

nique has been devised by Birkhaug⁽¹³⁾ within the last few months. This consists of an automatic puncture apparatus so arranged that forty individual needles in a disk penetrate the skin when a trigger is released. The vaccine is placed on the freshly cleansed skin, a thin piece of sterile filter paper is laid on the area, and enough vaccine is added to soak the paper well. Then the apparatus is placed upon the impregnated paper, the trigger is released, and forty small needle punctures are made in the skin through the paper, carrying the bacilli with them. The advantage of the multiple-puncture method is that ulceration does not occur, as occasionally happens with the single-puncture method.

Advantages

What are the advantages and disadvantages of BCG vaccination? The first advantage is the fact that the dose is a controlled one. Ordinarily, the development of a positive tuberculin reaction indicates that the person has acquired a tuberculous infection from his surroundings. There is no way of determining whether he acquired a very large or a very small dose at the time of his exposure. Naturally acquired infection means infection by a tubercle bacillus which has at least the potentiality of producing progressive disease, whereas the controlled dose as administered by BCG vaccination produces tuberculin sensitiveness and the immunity that goes with infection but produces it by a dose that is measured and by a strain that does not produce progressive disease. It is true, however, that many people are infected by natural means and that relatively few develop tuberculosis.

The second advantage is that the immunity conferred by the method, while not complete, is good, and for ordinary purposes is probably highly efficient. A person receiving BCG vaccination and developing therefrom tuberculin sensitiveness may of course be the recipient later of tubercle bacilli, acquired naturally. Unless the dose is massive, this more recently acquired infection will usually be controlled by the vaccination.

Disadvantages

The disadvantages are several. In the first place, the ulceration which may follow the single-dose method can be troublesome. It

appears five or six weeks after inoculation and it may persist several months. It is not large, usually less than 5 mm. in diameter, but it is a great nuisance. Such protracted ulceration is a distinct drawback to the procedure. Fortunately, ulceration does not occur with the multiple-dose method.

Secondly, artificial establishment of sensitiveness to tuberculin may occasionally be a handicap when differential diagnosis is a problem, especially in pediatrics. In some cases the tuberculin reaction is exceedingly helpful in differentiating various types of disease, especially pulmonary.

The danger of BCG inoculation in people who already have a tuberculous infection has been mentioned as a disadvantage. This danger is mostly theoretical, and there is no recorded proof that inoculation of such a person does more than produce a vigorous tuberculin reaction.

As was stated above, no one knows precisely how long BCG vaccination remains effective. It is known, however, that many people retain their acquired sensitiveness to tuberculin as long as ten years. This duration of immunity should tide one over any ordinary threat from a specific instance of tuberculosis, and is perhaps as long as vaccination against smallpox is effective.

Finally, it has been stressed by some of the disbelievers that no valid proof yet exists that BCG confers protection and thus that the body should not be subjected to an unnecessary infection with a living virus.

Indications for Administration

Who should be vaccinated? The answer to this question varies in different parts of the world. In certain of the European countries, especially in the Scandinavian countries, the trend is toward universal vaccination among all who do not react to tuberculin. In Sweden, with a population of six and a half million, one-half million have received vaccination. In France it is estimated that more than five million have been vaccinated. In Norway a law has been enacted recently which requires compulsory vaccination of every one under the age of 15 who does not react to tuberculin. Efforts in the United States have centered around vaccination of certain groups of people rather than the population at large—this because of the low incidence of tuberculosis. There are certain persons, however, who should have the vaccination without fail. These include all who

13. Birkhaug, K.: A Spring-Actuated Multiple Puncture Apparatus for BCG Vaccination, *Am. J. Clin. Path.* 17:751-754 (Sept.) 1947.

fail to react to tuberculin in the following groups:

1. All employees in general hospitals, sanatoria, and mental institutions whose work brings them in contact with patients. This would include medical and nursing students, doctors, nurses, technicians, maids, and orderlies.
2. Patients in mental hospitals.
3. Occasional persons in association with pulmonary tuberculosis where the contact cannot be broken promptly.
4. Special classes of the population among whom the mortality rate for tuberculosis is high.

Conclusion

At a recent conference held under the auspices of the United States Public Health Service, recommendations were made that (1) BCG should have very limited application; (2) its preparation should be under strictest possible control; and (3) further study and observation is necessary before the product should be released for production and general use.

THE TREATMENT OF DIPHTHERIA IN 1823

ALFRED MORDECAI, M.D.

City-County Health Department

WINSTON-SALEM

The story of "croup" reaches back to ancient times. Galen wrote of membranous lesions of the throat. "Angina suffocativa" and "putrid sore throat" appeared in epidemics here and there in Europe throughout the middle ages. An outbreak occurred in Tours, France, in the eighteenth century. It was described by Pierre Bretonneau, who recognized the disease as a definite clinical entity, and called it "diphtherite." He performed the first tracheotomy for "croup" in 1825, and in 1855 advanced the germ theory of disease.

Members of the medical profession will no doubt read with interest the following letter⁽¹⁾ concerning the treatment of a child, 19 months old, who died of "croup" (probably diphtheria) at Warrenton, North Carolina, in 1823. The letter was written by Miss

Ellen Mordecai at Spring Farm, near Richmond, Virginia, on May 14, 1823. It concerned the child of her sister, Caroline Mordecai Plunkett, who with Mr. Plunkett taught in a private school at Warrenton—at that time one of the leading centers of culture and business in the state.

The letter was addressed to Dr. Solomon Mordecai, a brother of Ellen and Caroline, who was a native of this state and a graduate of the School of Medicine of the University of Pennsylvania. After obtaining his M.D. degree, Dr. Mordecai entered the general practice of medicine at Mobile, Alabama, where he practiced until a ripe old age. We do not have his reply, but it is unlikely that he was in any way critical of the course of treatment in this case.

Dr. "P" was considered the foremost physician in Warrenton at that time. He was well known and highly esteemed in this state. Dr. "D" was likewise highly respected. Both physicians enjoyed large practices, and there is no doubt that they followed the approved methods of treating the "croup" at that time. The administration of an emetic was of prime importance in the treatment of "croup." Large doses of calomel and blood letting were the order of the day. Faith in vesicant plasters was universal.

* * *

Spring Farm, Wednesday Eve.,
May 14th, 1823

We are all quite well my beloved S—, but sad tidings reached us yesterday from Warrenton, informing us that our dear Caroline had lost her little Frank. He was taken on Wednesday night about 9 o'clock, suddenly ill of the croup, and on Saturday night, the 10th, the poor little creature breathed his last . . .

I this morning received a long letter from our poor dear C—, written on the 11th, the very day that her sweet child was consigned to the grave. She said it was a sad comfort to her to speak to me about him, or to those who would so truly sympathize in their afflictions. Our C— sends her tender love to you, my S—, and says, "how often have we wished that our kind S— had been his physician. Then, we should have been satisfied that all that skill and kindness could do, had been effected. Now we can *only hope*. Pray transcribe the treatment pursued by Dr. P— when you write and ask our S— to send me directions for treating the croup."

1. The original letter is in the possession of Miss Martha (Patty) Mordecai of Raleigh, and it is with her permission that it has been submitted for publication.

The poor little fellow had been playing quite lively about C's chamber. He then went to his nurse and laid his head in her lap. She took him up and he lay quite still with the perspiration pouring from him. This was about sunset and our sister, still occupied, had not been in the room, nor did she know that the child was at all indisposed. When she entered the room she heard him breathing strangely and sent for Mr. Plunkett, who gave him Antimonial Wine and Tartar Emetic while waiting for the arrival of the doctor. He [*the doctor*]⁽²⁾ repeated the latter [*tartar emetic*] and gave him 30 grains in two doses, of calomel, before there was any effect. He also put him repeatedly into a warm bath, applied a blister [*plaster*] to his breast and bled him "in my arms", until he almost fainted.

The physicians, P— & D—, remained all night. Next day his breathing became easier and on Thursday night was almost entirely so. It appeared [*that*] as long as the blister was drawing and while it discharged, his breast was greatly relieved. But, on Friday morning it had nearly dried up. Dr. P— sent ointment to be applied in the evening, but he became worse. The Dr., again bathed him; gave him repeated injections [*enemas*] during his illness and two powders to be taken during the night. He also administered drops to be given in flaxseed tea, which made the child very sick, and directed in consequence of this effect, that they should be given every two hours. In the afternoon he was again bled till he fainted; often had slight spasms during his illness and about sunset while our poor C— was lying by her child, he was seized with a convulsion. It did not last long. The Dr., put him in a warm bath, a blister on the back of his neck, cataplasms to his feet. Perceiving that the little sufferer could still swallow he gave him volatile alkali; had his hands rubbed with warm spirits. But alas! all was of no avail, and for the sad consolation of our dear afflicted Caroline I have at her request copied Dr. P's treatment my S—, hoping as well as you can judge from this statement you may approve of it, tho well aware that if you do not, that you will not to our C— and her afflicted husband, express your sentiments. They regret that the blister was not applied a second time. Would it have been better? I know you will write imme-

diately to our dear C— the sympathy of those who love her so dearly. Her resignation to the will of heaven will now be her only consolation . . .

As yet we have had no warm weather. Indeed for a week past I have had a little fire in my room morning and evening. I dread the summer for you, but you have the sea breeze. Is it healthy, or does it waft the vapour of the swamp to the city? For heaven's sake take care of my own S—.

Ellen

NEUROFIBROMATOSIS OR VON RECKLINGHAUSEN'S DISEASE

Report of a Case

F. L. KNIGHT, M.D., F.A.C.S.

and

A. M. OELRICH, M.D.

SANFORD

Neurofibromatosis or von Recklinghausen's disease is a tumor growth of nerve endings which may involve both the cutaneous and the deep nerves. The literature contains numerous reports of neurofibromas which have undergone malignant change, with involvement of the optic nerve, the deeper structures, the viscera, and bone.

The case reported below is the only one the senior author has seen in twenty-three years of practice. The diagnosis was missed by numerous competent men. The case is of interest because of the widespread distribution of the lesions on the body, and because the patient is still in good health ten years after the first malignant change in the tumor.

Case Report

A single white female, aged 51, was admitted to the Lee County Hospital on March 4, 1938, because of a painful growing lump on the inner aspect of the left thigh. The patient's family and past histories were negative. Her present illness began at 14, when a few scattered, brownish papules appeared on the face and arms. In a few years she was covered from head to foot with a hideous assortment of salmon-colored tumors, ranging in size from a pinhead to a hen egg (fig. 1). For the past thirty years she had been treated with lotions, ointments, sun lamps, and x-ray.

Laboratory studies on admission were all

2. Words in brackets supplied by the author.



Figure 1



Fig. 2. Neurofibroma. A circumscribed but not encapsulated tumor is seen in the skin. It will be noted that the tumor is not sharply demarcated from the corium. The neoplasm is composed of spindle-shaped cells possessing deeply staining nuclei which tend to be arranged into



whorls.
Fig. 3. Neurofibroma. High-power photomicrograph of the same lesion seen in figure 2. It will be noted that the nuclei of the cells are deeply staining. This is a characteristic finding in neurofibroma.

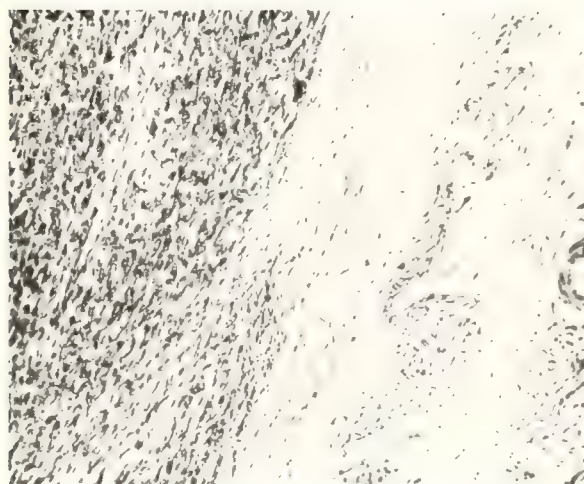


Fig. 4. Neurosarcoma. A circumscribed neoplasm is seen, which infiltrates the corium for a short distance. It will be noted that the tumor is very cellular, and the stroma is scant.

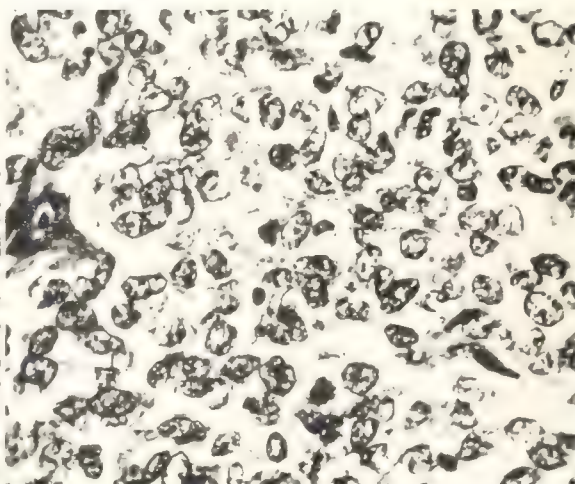


Fig. 5. Neurosarcoma. High-power photomicrograph of the tumor seen in figure 4. Note that the cells are large and vary in size, shape, and staining characteristics.

normal, and physical examination was negative except for the neurofibromatous lesions. In the midthird of the left thigh a painful lump could be palpated deep in the tissues over the course of the femoral nerve. Under novocain anesthesia this lump was widely excised. The tumor mass was fairly well encapsulated, and was not attached to any major nerve. The patient made an uneventful recovery, and subsequently received deep x-ray therapy over this area. The tumor was diagnosed as neurosarcoma.

Similar malignant tumors have been removed from the same site six times since this operation. On May 28, 1945, a large one was removed under general anesthesia; this time it was necessary to dissect and expose the femoral nerve, vein, and artery. This operation was followed by thrombophlebitis, and some edema of the left leg persists to the present time.

Dr. Robert P. Morehead has examined the tumors removed from this patient and has photographed representative areas from both benign and malignant tumors (fig. 2-5).

Summary

A case of neurofibromatosis of thirty-five years' duration is reported. The patient is alive and well ten years after the first neurosarcoma was excised.

News of the discovery of uranium fission reached this country from Germany in January 1939. Within a short time quite a few American physicists recognized the possibility of useful release of atomic energy and of making an atomic bomb. Then started a process of trying to interest the Government with no apparent action resulting. We physicists in the meantime voluntarily adopted secrecy policies which kept this information from the public and from other countries. After some months of frustration a direct appeal to the President was made and he saw to it that a program of work was started under the general supervision of my predecessor, Dr. L. J. Briggs. The secret was so well kept that most of the staff of the National Bureau of Standards were unaware of the existence of an atomic bomb project prior to the official announcement.

I know of no example anywhere in which a group of persons behaved in a more loyal and discreet manner than did this group of American physicists who, without clearance or loyalty probes, kept secret this important information and fought their way to the Chief Executive in order to get action. Later, of course, they were all fingerprinted and checked and rechecked before they were allowed to know these things which they had so long kept secret and about which they had to work so hard to arouse any official interest. I do not object to their being investigated this way; but I cannot help wondering what we could have done about it if we had found that some of these individuals could not be "cleared."

—E. U. Condon: *Science and Security*, Science 107: 661 (June 25) 1948.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

IX

SURGERY OF MALFORMATIONS OF THE HEART AND GREAT VESSELS

The last ten years have witnessed the development of a series of surgical maneuvers directed toward the cure or improvement of the once almost hopeless and poorly understood group of malformations—congenital anomalies of the heart and great vessels.

However, most of the principles now applied to surgery of anomalies of the heart and great vessels were worked out many years ago. At the turn of the century Carrel, Guthrie, Halsted, Reed, Holman, and Matas demonstrated methods of arterial suture and repair; the effect on the heart of arterial shunts was known; and Dr. Maude Abbott and Dr. Helen Taussig, by their careful studies of patients with congenital cardiac disease, had pointed out and clarified the pathology and the clinical diagnosis of many of the anomalies of the heart and great vessels.

In retrospect now the problems presented by these various anomalies do not appear complicated, and certainly the procedures used to correct them are no longer spectacular. Perhaps the explanation for the sudden rapid progress in this field of surgery lies in the confidence instilled in the surgeon by adequate anesthesia, better methods of combatting shock and hemorrhage, the antibiotics, and new surgical techniques—plus the courage and ingenuity of the surgeon to carry out the necessary operations.

It is not surprising that the first cardiac anomaly approached by the surgeon was the patent ductus arteriosus. Other associated malformations are rare; the diagnosis is not difficult; and the physiologic effects of an arteriovenous shunt were well understood many years ago.

In 1938 Gross reported the first case of successful ligation of a patent ductus arteriosus. The possibilities of such a procedure had been commented upon previously by numerous surgeons, and Graybiel, Strieder, and Boyer, a year before, had carried out an unsuccessful operation. Thus, for the first time, patients with this anomaly, whose life

expectancy at 17 was only one-half that of the general population, were offered a chance to lead normal lives largely free from the dangers of early heart failure and subacute bacterial endarteritis.

As bacterial endarteritis develops in approximately 25 per cent of patients with a persistent patent ductus, the next logical step was the extension of ligation to this group of infected cases. In 1940, Touroff and Vessel reported the first case of patent ductus arteriosus with superimposed subacute bacterial endarteritis cured by ligation. Refinements in technique have evolved until now, in most cases, complete division and ligation of the ductus is necessary for an adequate operation.

The next anomaly of the great vessels and heart to be attacked by the surgeon was coarctation of the aorta. This anomaly, not usually associated with other disabling malformations, is easily diagnosed, and lends itself to operative correction. In 1945 Gross and Hufnagel, and Crafoord and Nylin almost simultaneously performed a successful resection of the coarcted area of the aorta, with end-to-end anastomosis of the divided vessel. With the perfection of this operation, another group of patients with a life expectancy of only 35 years was offered the chance of a normal life span free from the dangers of hypertension, aortic rupture, cerebral hemorrhages, and subacute bacterial endarteritis.

The follow-up studies on this operation have not been carried on long enough to give the complete answer to all the problems that have arisen. For example, it is not definitely known whether the left subclavian artery, in the cases of stricture of the descending aorta adjacent to this vessel, will carry an ample amount of blood to lower the blood pressure; the nature of the generalized diastolic hypertension that accompanies the severe cases is not understood, nor is it known definitely whether this hypertension is reversible in all cases. There is no doubt, however, that many patients appear to be "cured" by the operation.

The cyanotic group of patients with congenital heart disease was next to challenge the surgeon. In the tetralogy of Fallot, the principal cause of the cyanosis is the insufficient supply of blood flowing through the pulmonary artery. It had been observed by Dr. Helen Taussig that cyanosis occurs

in these cases only when the ductus arteriosus is closed. Her suggestion to Dr. Alfred Blalock that this condition could be improved by the creation of an artificial ductus arteriosus led to the first successful operation, reported by Blalock and Taussig in 1945. Though this procedure is only palliative, since the other severe malformations included in the tetralogy of Fallot (such as a patent interventricular septum) cannot be corrected, the relief of the severe cyanosis and polycythemia, and the increase in exercise tolerance have made the operation worth while. Technically, the procedure consists in the end-to-end anastomosis of a systemic artery to the pulmonary artery. In other words, a patent ductus arteriosus is created instead of obliterated. The patients are poor operative risks, but the operative mortality has not been prohibitive. Potts and his associates in 1946 reported another technique for achieving an increase in the pulmonary circulation by anastomosing the side of the aorta to the side of the pulmonary artery. The final results of this remarkable surgical achievement, of course, must await the judgment of time.

The past decade has witnessed the beginnings of an entirely new field of surgery, for there are many other malformations of the heart, such as the various septal defects, which are still open to surgical attack. These startling new procedures have not only offered hope to patients with congenital cardiac anomalies, but have served to stimulate the surgeon to inquire further into the mysteries of heart disease—too long the sole domain of the internist.

WILL C. SEALY, M.D.
Duke Hospital

The general physician and mental health.—In the past twenty years there has been a very great change in our attitude to mental health . . . probably 30 to 50% of the patients consulting us have functional complaints as a part or the whole of their illness. We used to say that many of these had nothing the matter with them, and acted thus because we did not fully appreciate the emotional factors causing disease. We assume now that when a person is sick the whole of him is sick. General physicians must have an understanding of the patient's total problems. They always have done much work and much effective work in the field of psychiatry but they did not call it by any such fancy name. When they dealt with human unhappiness, maladjustments and psychosomatic complaints they drew upon their experience and their sympathies and called the resultant common sense.—W. V. Johnston: *General Practice in the Changing Order*, Canad. M. Assoc. J. 59:169, 1948.

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SEPTEMBER, 1948

"MEDICAL ECONOMICS" GIVES TRUMAN AN ASSIST

Simultaneously with its release of the "news" that President Truman is urging the nation to adopt compulsory health insurance, the Associated Press published a statement from *Medical Economics*, "the National Business Magazine for Physicians," that "Private physicians in this country earned an average gross income of \$17,476 and net income of \$9,884" last year, and that "Physicians in 1947 were in the top 3 per cent national bracket."

In the *Twin City Sentinel* for September 3, this story was carried in the same column with President Truman's statement. as though it were part of the same press release. The inference is obvious that the two stories were intended to be linked together. Certainly the layman who reads that physicians are earning such enormous incomes—even though 44 per cent of the gross income

goes for overhead expenses—is apt to feel that there may be ground for letting the government do something about the high cost of medical care.

Medical Economics has based its figures on reports from 4,878 doctors. When it is known that there are nearly 190,000 physicians in the United States, and that more than 150,000 are at work, one wonders just how accurate are these estimates, based on returns from less than one out of 30 doctors.

At least three factors should be taken into consideration in evaluating the *Medical Economics* poll: (1) Since doctors have their share of human nature, it is probable that those with higher incomes would be more apt to return the questionnaires than those in the lower brackets. (2) Few, if any, occupations require such a long period of preparation as does the practice of medicine; consequently a doctor's productive life is shorter. (3) The incomes of most doctors during periods of depression are relatively low, even though they keep busy. The right sort of doctor feels a moral obligation to care for his patients whether or not he can expect compensation for his services.

In its issue for May, 1948, *Medical Economics* presented a survey which put the doctors in a much more favorable light. Questionnaires returned by 246 county medical societies revealed that, while the cost of living had advanced 67 per cent from 1937 to 1947, physicians' fees had increased only 37 per cent. This report was in line with a study made by Frank G. Dickinson, Ph.D., Director of the Bureau of Medical Economics of the American Medical Association. He compared the increases in the cost of medical care and in the cost of living from 1940 to 1947, and found that, while the cost of living increased by 59.2 per cent over the 1935-1939 level, the cost of medical care and drugs rose only 31.6 per cent.

It is unfortunate that neither the earlier report of *Medical Economics* nor Dr. Dickinson's study was given the publicity accorded the results of the last questionnaire, just published in the September issue of *Medical Economics*. While it is certain that the editors of *Medical Economics* had no intention of injuring the medical profession, it is unfortunate that they should have played so directly into the hands of those seeking to socialize this country—beginning with the practice of medicine.

A WORTHY EXAMPLE

The R. J. Reynolds Tobacco Company has recently taken a progressive step by increasing the retirement age of its employees from 65 to 70 years. As under its previous retirement plan, an employee has the privilege of retiring on an allowance at any time after reaching the age of 55, but the amount of the allowance is increased yearly to the age of 65. Formerly retirement was compulsory at this age, but now the employee has the privilege of working five years longer. Even after an employee reaches 70, he may continue to work "upon request of the company and consent of the employee."

This plan recognizes the steadily increasing proportion of older people in our population, as well as the economic and psychologic folly of forcing a worker to retire when he is still able to do a full day's work. It also allows for the great variation in the rate at which the human machine deteriorates. One of the best things about the scheme is its flexibility. There is an interval of fifteen years, or even more, from the time the worker *may* retire until he *must* retire. This does away with the old idea that all people are built like the deacon's "one-hoss shay," to run so many years to the day, and then fall to pieces all at once.

The Reynolds retirement plan is a model which other industries might well adopt.

* * * *

"DOCTORS AND THE DRAFT"

In the *New York Times* for August 29, there appears a letter from Dr. William Dock, professor of medicine at Long Island College of Medicine, protesting against the exorbitant demands of the armed forces for medical men. Dr. Dock states that at present "There is one doctor for every 780 civilian patients; the Army wants one doctor for every 165 men, selected for sound bodies and sane minds . . . The expected incidence of illness and injury is perhaps 25 per cent as large among healthy men, aged 18 to 40, as in the general population. Why are 4.5 times as many doctors per person needed?"

If this question has a familiar ring, the reader is referred to an editorial which appeared in this journal in October, 1941—two months before Pearl Harbor—in which a protest was made against the inequitable distribution of doctors between civilians and

service men⁽¹⁾. This editorial was followed by a number of others. Both in the NORTH CAROLINA MEDICAL JOURNAL and in Dr. Dock's letter the point was made that the last World War inflicted more damage on the civilian population than on the armed forces, and that another great conflict would be still more of a total war, with the civilians bearing the brunt of it.

Dr. Dock recommends that a board of competent men should be appointed to study the question of medical service and to "plan for the most effective use of civilian physicians in peace and war." Certainly it is to be hoped that the most glaring mistakes made in the medical service during the recent war will not be repeated in the present draft.

1. Medical Care for Civilian and Military Population. Editorial, North Carolina M. J. 2:560 (Oct., 1941).

* * * *

B. C. G. AND GREAT BRITAIN

Many interesting sidelights on the British National Health Service are to be found in successive issues of the *British Medical Journal*. In the "Correspondence Department" for July 10, for instance, there are four letters discussing a recent paper advocating the use of B.C.G. vaccine for tuberculosis. One of these letters concludes:

"In view of the shortage of sanatoria staff and lack of facilities to take infectious cases of pulmonary tuberculosis away from uninfected contacts it is doubly important to use this method in England if there is the slightest hope that good may be done. Our tuberculosis officers in Bedfordshire, who are keen and competent young men, are anxious and willing to use the vaccine in the county. The only stumbling block is the Ministry of Health, who, presumably acting on Prof. Wilson's advice, will not supply the material, and it cannot be obtained through our commercial houses."

By way of encouragement the editor comments: "This matter is now under consideration by the Ministry of Health." The final decision rests with Minister of Health Aneurin Bevan. Let us hope that in this, as in other decisions affecting the health of the British people, Mr. Bevan will seek the counsel of the best medical minds of Britain—and then will follow their advice better than he did in establishing the National Health Service. Let us hope too that it will never come to pass in this country that laymen will be given the opportunity to tell medical men how to practice medicine.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

September, 1948

No. 9

THE more rapid decline of the tuberculosis death rate in younger age groups and the gradual aging of the population have resulted in an increasing proportion of tuberculosis deaths in the ages over 45. Tuberculosis among older people is often unsuspected because the disease has long been considered the particular foe of youth. Although tuberculosis remains the leading cause of death from disease in the ages 15 to 35 the tuberculosis death rate increases steadily with age from a minimum in childhood to a maximum at 75 years of age.

TUBERCULOSIS IN THE OLDER AGE GROUP

The present practice of making extensive studies of tuberculosis in the younger age group of our population, thus minimizing the importance of the disease in the aged, has proved to be unwise.

The statement has been made that in persons over the age of 50 years the occurrence of communicable pulmonary tuberculosis is more frequent than in any other period. In 3,000 routine post-mortem examinations made at the Philadelphia General Hospital from 1936 to 1937, 11.2 per cent of the 1,000 patients 60 years of age and over had died of tuberculosis. This and other evidence leaves little doubt that tuberculosis among older individuals is not rare.

The same irregular periods of activation and quiescence which are characteristic of tuberculosis occur in the older age group, and when continued, calcareous areas, fibrosis, fibrocaseous or fibrocavernous pathology finally develop. The disease among the elderly is usually of a chronic nature, and the patient continues with his occupation. One of the deficiencies in the control of tuberculosis is the failure to discover the disease in elderly individuals who may be spreaders of tuberculosis for many years.

A study of case histories of older patients having pulmonary tuberculosis gives the impression that the disease is usually acquired before 40 years of age though the time of onset is often difficult to determine.

Herewith are four illustrative cases:

Case 1.—A farmer at 28 years of age had a profuse hemorrhage, which was diagnosed as being of gastric origin. Six years later a daughter died of tuberculous meningitis. Fourteen years later, in an accident, he was badly exsanguinated. He recovered and continued his farm work for 22 years apparently in good health. At 70 years of age he complained of a productive cough and had a low grade fever. A sputum examination made at this time showed tubercle bacilli. Two years later, he died of tuberculosis. This man apparently had pulmonary tuberculosis for 44 years.

Case 2.—A female, married for 22 years, had been in poor health, but as no clinical symptoms were present to suggest serious trouble her family physician concluded that she was a malingerer and lost interest. Another doctor later found abnormalities in her chest upon physical examination and tubercle bacilli were present in her sputum. This woman, now 68 years of age, is still living.

Case 3.—A seven-year-old female died of pulmonary tuberculosis 22 years ago. The family consisted of two brothers, a father, and mother. During a school tuberculin-testing program held later the two brothers showed positive reactions. The mother was thought to be the source of infection, but her sputum examinations proved to be negative. The father failed to cooperate, claiming that he was in good health. Later he made a poor recovery from influenza, during which he lost weight and acquired a productive cough. An X-ray of his chest then showed far-advanced tuberculosis. He died of tuberculosis at the age of 80 years.

Case 4.—Forty-six years ago a young man, then 16 years of age, had three quarts of fluid aspirated from his chest. Fifteen years later rales were found in his right lung apex. During the next few years physical signs were found in both upper lobes. In 1933 an X-ray of his chest showed marked involvement of both upper lobes and this had progressed to cavity formation by 1946. This man, now 69 years of age, appears in excellent physical condition and in good health.

It seems unreasonable to assume that repeated exogenous reinfections account for the course of the disease in such cases. Many of these patients date the beginning of their trouble back to only a few months, while their X-ray indicates a long-standing disease finally reaching a stage where a breakdown occurs. Physical examination does not materially aid in making a diagnosis. Spinal deformities, ossification of the costal cartilages, and a decreased vital capacity are encountered in older patients. These alter the signs on inspection and palpation. Upon auscultation the findings are often confused by the presence of other pathologic conditions, namely, bronchitis, bronchiectasis, asthma, heart disease, and, particularly, emphysema. The X-ray film is the decisive factor in making a diagnosis in older as well as in younger persons. Neither a negative sputum examination nor a negative tuberculin test can rule out the disease.

These elderly patients present problems of segregation, individual education for their own and the public's safety, and their own personal treatment.

In the past 75 years persons over 50 years of age in the United States have increased from 3.8 to 5.7 per cent. The census of 1940 showed approximately 9,000,000 adults over 65 years of age. Should this increase in our old age population continue aged persons with tuberculosis must be given serious consideration to avoid the transmission of the disease from the aged to the young.

Tuberculosis in the Older Age Groups, Charles D. Boyd, M.D., The Wisconsin Medical Journal, December, 1947.

To advocate the indiscriminate use of streptomycin, especially in moderately advanced or advanced cases of pulmonary tuberculosis, not only is premature but also carries with it certain dangers and drawbacks. Among the principal dangers in the use of this drug is its toxicity, which may seriously affect hearing, sight and kidney function and cause skin eruptions. At present, it can only be said that we have seen little in the treatment of well established pulmonary tuberculosis by streptomycin that gives cause for any great optimism regarding its curative value.—Comm. on Tuberc., N.H. Med. Soc., New England J. Med., Oct. 23, 1947.

PUBLIC RELATIONS

From every side we hear reports of complaints and vitriolic accusations hurled at the medical profession by a disgruntled public. From the headquarters of the American Medical Association come reports of a barrage of criticism. Much discussion centers around the matter in medical meetings. We see accounts of it in newspapers, periodicals, and medical publications.

This situation has developed rather subtly during the past few years, and has grown rapidly, it seems to me, since the end of World War II. One could, I think, be justified in labeling it a "war baby," and assume that it came largely as a psychologic reaction to the upheaval of world conditions in general. In a world over which the winds of dissension and misunderstanding are blowing fiercely, and in which democratic ideologies are threatened, new concepts of government are at war, bitter parliamentary struggles are raging, the wolves of Communism are at our very threshold, and the people of our country are anxious and frustrated, the public is apt to be more critical, more given to exaggeration, and unduly upset.

There are always two sides to every question, and while I believe there is much misunderstanding on the part of the public, as well as a rather uncharitable attitude of the public toward the medical profession, still I feel that the responsibility for most of our woes can be laid at our own doorstep.

Certainly, the relations of the medical profession and the public are at a rather critical stage of strain at the present, and demand immediate action on the part of the profession. Since the medical man's capital investment is in his education and training for special service, and in view of the fact that he is engaged in the business of selling his service to the public, it behooves him to keep his relation with the public in good repair continuously, and to improve it whenever possible. Marshall Field's philosophy that the customer is always right is a pretty good business philosophy.

Let me emphasize therefore that, in my opinion, it is up to the medical profession to make the initial move, and to take definite action at once toward a solution of our public relations problem. The public charges the medical profession—and with some justification, I am sure—with making excessive

charges for medical services, and with refusing flatly and abruptly to make night calls. They say that we are unmannerly to our patients, and unmindful of their best interests, and that in a few instances, at least, patients have died as a result of this attitude. It has been charged that the hospital extension program is designed primarily for the benefit of doctors, and to make it possible for them to grow richer and richer.

All of these charges against the medical profession, of course, add fuel to the fire of agitation for government control of medicine. The flame is being fanned vigorously by a tax-supported bureau in Washington, which seeks to bring about regimentation of physicians and political control of medical services.

What are the answers to the problem of improving public relations? I think it is primarily a question of education for both the physician and the public. The public should be shown that the chief concern of the average doctor is the welfare of his patients, and that, regardless of pecuniary remuneration, his aim is to place his services to suffering humanity above all other considerations. I believe that physicians basically are just as kind, considerate, and sympathetic as those of previous generations. There is a shortage of physicians in many communities of our state. The ratio of physicians to population in my county (1 to 4000) is more or less typical of average rural communities in our country. It is obvious, therefore, that as a result of this dearth of doctors, a certain percentage of people can not possibly have adequate medical service.

Hospital facilities are woefully inadequate in our state, particularly in the rural areas. It should be pointed out to the public that it has a moral obligation and responsibility in providing more adequate hospital facilities. Doctors are no longer able financially to build and operate hospitals. The hospital business has grown to be one of the major businesses of this country. These shortages will no doubt be corrected gradually under the provision of state and federal appropriations.

The public should be made conscious of the fact that the American system of medicine, although imperfect in many ways, is far superior to any government-controlled system in the world.

The physicians of North Carolina and the country in general should be brought to realize that a change in attitude toward the public is past due. Attitude means everything in the life of an individual or an organization. The proper attitude on the part of a physician will cover a multitude of shortcomings. If we are to sell our services to a public that is confused, skeptical and resentful, we must improve our public relations through a change in attitude *now*. We can no longer brush off abruptly night calls from anxious parents and families without even a suggestion as to temporary measures directed to the relief of the patient, reassurance, or offers to help in some way. It is a very real emergency to most of those who call, and excuses, in general, are resented. There are many things a doctor can do to show his concern even though he cannot answer a call. He can make suggestions as to measures that might give temporary relief. He may be able to direct the patient to the outpatient department of the hospital for a hypodermic which might give relief until morning. He could even have certain patients admitted to the hospital, and give orders to the nursing staff as to what measures to adopt in the treatment of the case temporarily. No number of excuses, however logical they may seem to the doctor, will suffice to appease the anxiety of the patient and his family.

The doctor has a very definite moral responsibility to his patient, and there is no substitute for this. His education along this line should begin while he is still in medical school, and should be stressed above all else. He should adopt the principles embodied in the golden rule early in his career and keep them ever in mind in all his dealings, professional and otherwise, with his fellow men. With such a philosophy as that in practice, we would need no improvement in public relations.

The American Medical Association has done much in an effort to improve public relations by outlawing and bringing to light certain pernicious practices on the part of certain members of the profession in accepting rebates from optical houses. The American College of Surgeons does the same thing in regard to fee-splitting. Methods directed toward a house cleaning, in general, will be bound to react favorably in the eyes of the public, as well as stimulate our own self-

respect.

Too much specializing in medical practice, I am sure, has added somewhat to our present predicament. The movement which is now under way to make possible post-graduate study for the general practitioner, in order that he may be better qualified for his work, is of great importance, and will give him the recognition in the eyes of the public which he deserves. Everything and anything done to promote the interest of the general practitioner will go far in solving our problem. He is really the backbone of the profession. He is the one who has more direct contact with the public than any other group.

The Public Relations Committee of the North Carolina Medical Society, under the able leadership of Dr. Donald Koonce, is doing a splendid job in trying to effect a better understanding and better relations between organized medicine and the public. This effort should extend right on down to the local or county level, with the county societies making a determined effort to get the movement on an individual basis, because it is at this point that the battle will be won or lost. In this way each individual physician would be playing his important part in showing by a proper attitude that he is sincere in his efforts to give the public the service which it deserves.

FRED C. HUBBARD, M.D.
North Wilkesboro

Longevity in United States Sets New Mark in 1946

The average length of life of the people of the United States based on 1946 death rates reached a new high of nearly 67 years, according to Federal Security Administrator Oscar R. Ewing. He based his statement on life tables for 1946 compiled by FSA's National Office of Vital Statistics, Public Health Service. This represents an increase of almost a full year over the corresponding figure for 1945, and an increase of nearly two years over the level prevailing in the immediate prewar period 1939-1941.

The 1946 life tables have been prepared separately for white and non-white males and females, and show that the expectation of life at birth for white females is now 70.3 years, exceeding the biblical "three score and ten" for the first time in the history of the nation. On the average, white men do not live as long, their average length of life being 65.1 years.

The expectation of life at birth has steadily increased since the turn of the century, largely as a result of the control of infectious diseases, which formerly took a heavy toll of lives among infants, children, and young adults.

CORRESPONDENCE

"IT IS LATER THAN YOU THINK"

Burlington, North Carolina
September 9, 1948

To the Editor:

"It is later than you think."

When we set out for the Chicago Conference of the Professions, September 6 and 7, sponsored by the National Physicians Committee, I was still feeling rather pleased with our victory over the proponents of socialized medicine in Congress earlier this summer. I had not read Ewing's report of September 2 initiating the new drive of the proponents. President Truman had not made his Labor Day pronouncement either. I knew that Dewey had placed himself against it, but I had rather overlooked Dewey's running mate's (Warren) long record as an aggressive proponent of the socialization of medicine. All these things came into focus at the Chicago meeting and took their place in the pattern of ideological warfare that has spread from Asia and Europe to us. The Communist danger here is real. It can be defeated, but to do so will require the sacrifice of time, money, thought, and energy by all of us—not just a few.

I do not recall ever having been shocked by any speech as I was by that of Dr. Lexington Jones, a dentist from Christ Church, New Zealand. He was going along as we, only moderately concerned about the situation in 1938, when their Prime Minister announced for socialized medicine. At that point in his speech he held up a Chicago newspaper with big headlines showing Truman's Labor Day announcement—just made on the day of his speech. Then he said, "Three months after I saw an announcement like that in our paper we had socialized medicine."

After that he went on to describe the deterioration of medicine, dentistry, and the general moral fiber of the people under the socialistic regime, and told of the mounting and bankrupting expense of the whole thing.

He concluded with breath-taking earnestness an appeal that was evidently from the heart and from bitter experience:

"Gentlemen, I implore you to be up and doing. In the unchangeable pattern of Socialism you are to be the next victim. Should you submit—then you permit the laying of the foundation for a totali-

tarian structure to be built. If you allow totalitarianism to exist here on any scale, then you expect it to be maintained by Gestapo police methods, dictatorship, loss of liberty, and opportunity, and resultant degradation of the mass of people.

"In conclusion, gentlemen, I hope nobody says 'I have enjoyed your speech.' I have not given it for your enjoyment. I hope it worries you excessively. I hope it causes you sleepless nights until you have done something about it. I hope your action will be affirmative and effective so that you will safeguard your rights of democracy—your way of life—the American way of life."

Sincerely,

GEORGE L. CARRINGTON, M.D.

* * * *

STATEMENT ON POLIOMYELITIS

To the Editor:

At its meeting on August 31, the State Board of Health reviewed the poliomyelitis situation in North Carolina and requested that the following statement be prepared by the State Health Officer for general release.

J. W. R. NORTON, M.D.

State Health Officer

As of September 4, the North Carolina poliomyelitis attack rate stood at 50.8 cases per 100,000 population. This is the highest rate we have experienced, the two highest previous years being in 1935 and 1944 with rates of 20 and 23, respectively.

North Carolina has had a much lower poliomyelitis rate over a period of years than the nation as a whole. For the period 1916-1925 this state ranked 41st among all of the states with an average of 1.4 cases per 100,000 population as compared to 7.5 for the nation as a whole. For the period 1926-1935, North Carolina was 31st, the average rate being 4.2 for the state and 6.4 for the nation. Between 1936 and 1945 we were 38th with an average rate of 4.8 as compared to 6.9 for the nation. In 1946, there occurred the nation's second highest total number of cases ever recorded. The average rate for the nation was 19.1 cases per 100,000 or only slightly below North Carolina's two previous epidemic years. This state ranked 46th in 1946 with a rate of only 4.6. In 1947 we had our third highest year up to that time, with 8.1 cases per 100,000 population as compared to the nation's 7.4. During that year twelve other states ranked higher.

Since 1916, California, New York, Connecticut, and Minnesota have averaged more cases than most other states. New York had the most severe statewide epidemic ever recorded in this country in 1916 with 128.7 cases per 100,000 population. Connecticut has had two epidemics with rates of over 60. Minnesota has had five epidemics of over 30 cases per 100,000 population.

The age of the cases in the current outbreak is approximately the same as in previous years. In some states the tendency has been observed for more older persons to be involved in recent years than formerly. It is possible that a decline in the percentage of children in the population in those states has been the cause for such a change. In North Carolina the percentage of children in the population has not declined to a comparable extent. This would have the result that the age distribution of our cases would also show little change. The percentages of the cases in the various age groups in 1935

were: 1-4 years, 50%; 5-9, 28%; 10-14, 9%; and 15 and over, 13%. In 1948, on the basis of the first 1,810 cases reported, the comparable percentages were: 1-4 years, 46%; 5-9, 27%; 10-14, 13%; and 15 and over, 13%.

There has been a consistently higher poliomyelitis rate in whites than in Negroes in North Carolina. In 1935, the white morbidity rate was 23.2 cases per 100,000 white population while the Negro rate was 14.7 per 100,000 colored population. In 1944, these rates were 29.0 for whites and 7.1 for Negroes. In 1948, on the basis of the first 1,200 cases reported, the rates were 40 for whites and 12 for Negroes.

The case fatality rate in our present epidemic has remained at approximately 5%, there having been 95 deaths up to the present time. The 1935 deaths totaled 42, giving a rate of 6.2%. In 1944, there were 36 deaths and a rate of 4.4%. These rates compare favorably with those of the great New York epidemic of 1916 with a case fatality rate of 25% and the California epidemic of 1943 with 6.3% of the cases reaching a fatal termination.

During our previous two highest years, spread of the cases took place outward in all directions from a single focus. This was the case in 1935 when Franklin County had the highest attack rate and other counties were involved less extensively the further away they were from that point. The majority of the cases were limited to a circular area within approximately 75 miles of Louisburg. In 1944, Catawba County was the center of the outbreak with other counties being involved less extensively away from the center. The major portion of the cases were again within a radius of about 75 miles of Hickory.

In 1948, four separate epidemic centers developed almost simultaneously with still two more appearing a month later. Burke, Guilford, Moore, and Cumberland counties began having a definite increase in cases in June. Buncombe County had an acute outbreak in July. At the same time, New Hanover County had a less extensive outbreak. There was considerable spread fairly uniformly in all directions from the Guilford County focus. In the Burke County region, cases appeared in large numbers to the southeast and east only. No very extensive spread has occurred so far from the Buncombe and New Hanover areas, although there has been a moderate generalized involvement of many of the southeastern counties in the state.

The increase in the numbers of cases for the state as a whole has been irregular as the disease progressed or declined in the different areas. The decline or fall in one area overlapping that in one or more of the other areas. During the week ending July 23, a total of 215 cases became ill. Since that date, there has been an irregular decline. The later weekly totals are as follows: For the week ending July 30, 157; August 6, 152; August 13, 167; August 20, 146. In previous years, cases have continued to appear in steadily decreasing numbers throughout the fall and on into the first two months of the following year.

The fact that cases can be expected to continue in certain areas for such a long period makes it necessary that such problems as the opening of schools be handled by the local health and school authorities after careful evaluation of the local situation. Each decision has to be a compromise between waiting several months for all cases to stop occurring and the first stages of definite decline. Fortunately, experience in other places in different years has shown that the opening of schools is not

followed by an increase in cases, even though the general incidence has not returned entirely to normal.

This does not mean that personal precautions should be relaxed with the opening of schools. While bans on public gatherings are usually no longer indicated, after the opening of schools parents should continue to have their children refrain from becoming overtired. Nutrition should be properly maintained. Full sanitary precautions must also be continued. The family physician should be consulted at the first signs of illness. These are precautions that wise parents should observe all year and not just during times of increased incidence of poliomyelitis.

LETTER FROM DR. ALEXANDER

To the Editor:

The following letter from Dr. Janet Alexander, who was elected an honorary member of the Medical Society of the State of North Carolina at the meeting of the House of Delegates in May, should be of interest to the members of the Society.

Sincerely yours,

ROSCOE D. McMILLAN, M.D.

Secretary, Medical Society of
the State of North Carolina

Dear Dr. McMillan:

This morning at three o'clock I was called for an Ob case in the city—When I got there I found a slow, tedious, normal case—the logical thing would have been to say it would come off normally several hours hence and I would come back and finish my sleep—but I have learned by experience I would no more than have gotten home till they would send again—I just settled down to await events. There were two midwives they had called, two servants and a relative who stayed in the room. As the pains and groans increased these all got more and more excited and wanted me to rub the vagina with hot olive oil, to give morphine, to do this or that—while one brought in a pan filled with wheat. This was waved over the abdomen and then set under the bed to be given to the poor—the husband came to the door and announced that the goat had arrived. One relative rubbed her hands over the abdomen then went out and put her hands on the head of the goat—it was to be offered in sacrifice to appease the Lord and invoke a blessing on the patient. Someone else came with the butcher knife which was to be used in the butchering—this was waved over the patient and she had to touch the blade, then sent the poor goat out for sacrifice.

Yesterday morning a woman was brought in from a distance of 60 miles—she was carried to the Bus by two men who had a cradle on two bamboo poles—then later carried to our hospital. Her history was labor pains two days before—the arm prolapsed. The midwife pulled and pulled and at last the arm came off but the baby did not come. She had a temperature of 101°, three fingers dilated.

During the night before a refugee gave birth to a four pound baby. It surely is a midget compared to the 8½ pounder of this morning.

I have just been over to make rounds. We witnessed an interesting sight. We just had some new kitchens built for the patients as each is responsible for her own food. A mother dog brought her brood of seven puppies into one of them to get them out of the rain. I did not have the heart to send her out again with them. Just now there was a great downpour and the kitchen floor got flooded. She began to pick them up and carried them into the ward one by one. She could not find the 7th as he had crawled under the stove and was very quiet. She went again and again till she found him. I was interested to know how she could count them!

We have our hands full trying to do for the refugees. It is said there are 150,000 here in the camp. The camp authorities have not been able to get a census for they will not allow anyone to see their women to count them! They say they have counted and know how many there are—their object is to draw free rations then sell the surplus for other things. Two women were talking in the clinic yesterday—one said "The people there in our camp are very deceitful. In one family there are only two members and they are drawing rations for 20 people. Now in my family we are three and we are drawing for only 15." She had plenty to say about those getting more than her own family.

Each morning at the clinic we give out powdered milk to around 300 women and children from the refugee camp—we treat around 200 and we have two wards full of them. Our work is very heavy because of the large number who look to us for help. And we have plenty of outcalls and other work.

Your letter which reached me this morning brought a great warmth to my heart—You have given me great honor which I did

not deserve. I feel I have done very little which is an honor or credit to anyone—but all the same your interest and support encourages me to keep trying. We do see results which make us glad we have the opportunity to serve.

A car has come to take me to the city to see a patient. My own car which was promised three years ago has never arrived. I am periodically told by the Company that they have been requisitioned by Government "But we hope to reserve one for you in the next shipment." We are unable to reach the thousands in the villages who look to us for help.

Kindly thank the Society for this kindness shown to me.

Sincerely,

Janet Alexander

Montgomery, W. Punjab, Pakistan
August tenth.

* * * *

SCHOLARS IN MEDICAL SCIENCE

To the Editor:

Enclosed is an announcement inviting medical schools to make nominations for the 1949 group of Scholars in Medical Science. Dr. Ivan W. Brown of Duke University School of Medicine and Dr. Manson Meads of The Bowman Gray School of Medicine of Wake Forest College were appointed from North Carolina in the 1948 group.

The purpose of the program is to relieve in some measure the teacher-investigator shortage. Your help in making it known will be appreciated.

Sincerely yours,

DOROTHY ROWDEN

Medical schools in the United States and Canada are invited by the John and Mary R. Markle Foundation to make nominations for the second group of Scholars in Medical Science on or before December 1, 1948. Each school, through the dean, may nominate one candidate. No nominations from individuals will be considered.

The program is designed to aid promising young men and women planning careers in academic medicine, who have not yet made their reputations. They should have completed the usual fellowship training in some area of science related to medicine and should hold, or expect to hold, in the academic year 1949-50 a full-time faculty appointment on the staff of a medical school.

Grants of \$25,000, payable at the rate of \$5,000 annually, will be made to the schools over a five-year period for the support of each Scholar finally selected, his research, or both.

The number of Scholars to be appointed in 1949 has not yet been determined. Sixteen were chosen in 1948. A new booklet describing the plan is available on request from the Foundation, 14 Wall Street, New York 5, N. Y.

SPECIALTY BOARDS

Asheville, N. C.

To the Editor:

Your editorial on specialists and general practice⁽¹⁾ recalls the beginning of the certifying boards.

Professor Hamilton of the University of Minnesota wrote neurologists for their recommendations anent the best mode of training for their specialty. He later told me that I was one of only three who urged that at least three years should be spent in general practice before beginning special preparation. The other eighty advised three years in special clinics immediately upon graduation.

Previous to that—in 1909—I had published in *Washington Medical Annals* a paper on "The Need of Medical and Neurological Training in Practicing Psychotherapy." This was inspired by the shortcomings of the "Worcester faith-healing" practices, and by the many patients referred for psychotherapy who were really in need solely of neurological or medical or even surgical treatment.

Consultants who know only a specialty are unsafe, being short of general medical sense.

TOM A. WILLIAMS, M.D.

1. General Practice as Preparation for Specialization. Editorial, North Carolina M. J. 9:313 (June) 1948.

ADDITIONS AND CORRECTIONS FOR THE DIRECTORY

The following committee was appointed too late to be included in the list of committees of the Medical Society of the State of North Carolina which appeared in the supplement to the August issue.

Committee on Centennial Celebration

William deB. MacNider, M.D., Chairman..Chapel Hill
Donnell B. Cobb, M.D.....Goldsboro
Paul H. Ringer, M.D.....Asheville

* * *

The following corrections for the roster have been received. Any additional corrections should be sent at once to Dr. Roscoe D. McMillan, Red Springs, N. C.

Dr. J. W. Jolley of Elkin—Specialty should be I rather than OALR

Dr. J. T. Sullivan of Asheville—Specialty should be Or rather than GP

Dr. T. D. Tyson, Jr. of High Point—Specialty should be ObG rather than Pd

Dr. B. W. Whitfield of Murphy—Specialty should be GP & S rather than GP

BULLETIN BOARD

MATHESON FOUNDATION MEDICAL LECTURES

The Matheson Foundation and the Mecklenburg County Medical Society will again sponsor a series of medical lectures this fall. The program will cover the afternoons and evenings of October 21 and October 22. All phases of the program will be held in the ballroom of the Hotel Charlotte, Charlotte, North Carolina.

A symposium on congenital heart disease has been arranged, at which time the clinical aspects of the problem will be presented by Dr. Harry Gold of Cornell University. The radiological aids in the diagnosis of congenital heart disease will be presented by Dr. Eugene Pendergrass of the University of Pennsylvania, and the surgical possibilities will be discussed by Dr. Julian Johnson of the Department of Surgery at the University of Pennsylvania.

Dr. J. B. Amberson of New York will speak on the experimental and clinical aspects of the treatment of tuberculosis with streptomycin. One afternoon will be devoted to a clinicopathologic conference which will be put on by Dr. Balduin Lucke, Professor of Pathology at the University of Pennsylvania.

All doctors in the state are cordially invited to attend the Matheson Lectures.

DUKE SYMPOSIUM

The eleventh annual Duke Symposium, to be entitled "Symposium on Therapy," will be held Thursday, Friday, and Saturday, November 4, 5, and 6, in the Page Auditorium on the West Campus of Duke University. A program presenting papers by nationally recognized authorities in their respective fields has been arranged. Two buffet dinners will be held on Thursday and Friday evenings in order to give an opportunity for the visiting physicians to meet the speakers and to have a social evening together.

A number of rooms have been set aside at the Washington Duke Hotel and the Malbourne Hotel to accommodate visiting doctors. These rooms will be held until October 1.

Seats for the Duke-Wake Forest football game on Saturday afternoon may be obtained in a special section reserved for the doctors registering for the Symposium. Application should be made directly to the Duke University Athletic Association prior to October 1.

Every doctor is invited to attend this meeting.

PROGRAM

Thursday, November 4

2:00 p.m. 1. Dr. Harry Gold, New York
Newer Trends in the Management of
Congestive Failure

2. Dr. Carl V. Moore, St. Louis
Recent Advances in the Treatment
of Anemia

3. Dr. Harry L. Rogers, Philadelphia
Recent Therapeutic Trends in Aller-
gic Diseases

6:00 p.m. Dinner at Hope Valley Country Club

8:00 p.m. 1. Dr. C. P. Rhoads, New York
Recent Advances in the Treatment of
Malignant Neoplastic Disease

2. Dr. William L. Bradford, Rochester,
New York

Recent Developments in the Preven-
tion and Treatment of Certain Com-
municable Diseases

Friday, November 5

- 10:00 a.m. 1. Dr. Wallace E. Herrell, Rochester, Minnesota
The Present Status of Antibiotic Therapy
2. Dr. Stewart H. Clifford, Boston
The Prevention of Neonatal Mortality
- 2:00 p.m. 1. Dr. Carl F. Schmidt, Philadelphia
Newer Trends and Methods in the Development of Therapeutic Agents
2. Dr. Willard O. Thompson, Chicago
Therapeutic Advances in Endocrinology
3. Dr. Richard H. Freyberg, New York
The Treatment of Rheumatism and Allied Disorders
- 6:00 p.m. Barbecue Supper
- 8:00-9:00 p.m. Round Table Discussion—
A question and answer program
Moderator—Dr. O. H. Perry Pepper
Philadelphia

Saturday, November 6

- 10:00 a.m. 1. Dr. J. E. Moore, Baltimore
The Treatment of Syphilis
2. Dr. Willis J. Potts, Chicago
Special Surgical Problems of Children
- 2:00 p.m. Football Game—Duke University vs. Wake Forest College

STATE BOARD OF MEDICAL EXAMINERS

The North Carolina Board of Medical Examiners will meet at the Cherry Hotel, Wilson, Monday, October 25, at 10 a.m., for the purpose of interviewing candidates for licensure by endorsement.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Dr. Stuart Willis of McCain was re-elected secretary of the National Tuberculosis Association at its annual meeting held in New York, June 15-18. Dr. David T. Smith of Durham was appointed as representative director, and Dr. Kemp D. Battle of Rocky Mount as director-at-large. Mr. Frank W. Webster, executive secretary of the North Carolina Tuberculosis Association, was elected to the executive committee of the National Conference of Tuberculosis Secretaries.

Dr. Herbert L. Mantz of Kansas City, Missouri, is president of the National Tuberculosis Association; Dr. H. Corwin Hinshaw of Rochester, Minnesota, of the American Trudeau Society.

Dr. William A. Smith assumed his duties as director of the Division of Tuberculosis Control of the North Carolina State Board of Health on June 1.

Dr. Smith, a native North Carolinian, succeeds Dr. T. F. Vestal, who resigned to accept a position as director of the Forsyth County Hospital.

The new Director attended the University of Pennsylvania Medical School and entered the Army in 1917. He has had experience in the field of tuberculosis control, having served at the Children's Seashore House, Atlantic City, New Jersey, and at the United States Army Tuberculosis Center, Fitzsimons General Hospital at Denver, Colorado.

Prior to his appointment as Director of the Division of Tuberculosis Control, Dr. Smith was Post Surgeon at Fort Jackson, South Carolina, with the rank of Colonel.

The Southern Tuberculosis Conference will hold its annual meeting at the DeSoto Hotel, Savannah, Georgia, from September 30 through October 2. Speakers will include Dr. J. D. Murphy of Oteen and Dr. H. S. Willis of McCain. Dr. M. D. Bonner of Jamestown will preside over a luncheon session and Dr. David T. Smith of Durham will be moderator for a panel discussion.

Mr. Frank W. Webster is secretary-treasurer of the Conference.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE

The following new staff members have been added to the medical faculty:

Dr. William Charles Doust as instructor in anatomy. Dr. Doust, who has recently completed a tour of duty as Flight Surgeon with the U. S. Army Medical Corps, received his A.B. and M.D. degrees from Syracuse University. He is replacing Dr. DeArmond Moore, who resigned in June to continue his training at the Montreal General Hospital in Montreal.

Dr. Weldon Huske Jordan as fellow in pathology. Dr. Jordan, an alumnus of the Medical School, graduated at Harvard Medical School in 1947 and interned at the Geisinger Memorial Hospital, in Danville, Pennsylvania.

Dr. Gilbert F. Young as instructor in pharmacology. Dr. Young received his M.D. degree from the Medical College of Virginia.

* * * *

Dr. Margaret C. Swanton, who was a fellow in pathology during the past year, has been appointed instructor in pathology. Dr. Swanton is a graduate of Johns Hopkins University School of Medicine.

* * * *

Dr. C. D. Van Cleave, associate professor of anatomy, is working this summer in the Radiation Laboratory of Dr. Joseph G. Hamilton, University of California, on techniques of radioautographs.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE

Dr. Thomas Lide of Anderson, South Carolina, has joined the staff of the Bowman Gray School of Medicine as instructor in pathology. He is a graduate of the Duke University School of Medicine, and served as pathologist for the Moore County Hospital and the North Carolina Sanatorium at McCain prior to coming to Winston-Salem. He was in service with the U. S. Army Medical Corps from 1940 to 1945.

* * * *

Dr. Frank R. Lock, professor of obstetrics and gynecology, presented a paper at the fifty-ninth annual meeting of the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, held in Hot Springs, Virginia, September 8 to 12. His subject was "Early Diagnosis of Carcinoma of the Cervix."

* * * *

Dr. James A. Harrill, assistant professor of surgery in charge of otorhinolaryngology and bronchoscopy, was one of the lecturers for the postgraduate course in ophthalmology and otolaryngology held in Charleston, South Carolina, September 13 to 16. His subject was "Bronchography." The course was sponsored by the North Carolina Eye, Ear, Nose and Throat Society and the South Carolina Society of Ophthalmology and Otolaryngology. Dr. Harrill is secretary-treasurer of the North Carolina Society.

FOURTH DISTRICT MEDICAL SOCIETY

The Fourth District Medical Society met in Wilson on August 10. Drs. Roy Norton and C. P. Stevick of the State Board of Health spoke on poliomyelitis.

EDGEcombe-NASH COUNTIES MEDICAL SOCIETY

Dr. E. S. Ray, assistant professor of internal medicine at the Medical College of Virginia in Richmond, spoke at the August meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on August 11. His subject was "Sarcoidosis."

NEWS NOTES

Dr. W. J. Vestal of Lexington, who recently completed sixty-five years of practice, was honored by the Davidson County Medical Society at a banquet held at Lexington Memorial Hospital on September 1. The society presented him with a physician's bag equipped with an emergency medicine case and a stethoscope. Dr. J. Meigs Flippin of Pilot Mountain, who studied with Dr. Vestal at the College of Physicians and Surgeons at Baltimore and who has completed sixty-four years of practice, was a guest at the banquet.

* * * *

Dr. James M. McAnally of Reidsville died on September 7, after a six weeks illness which followed a heart attack.

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Dr. Ross S. McElwee died at his home in Statesville on September 8. He had been ill for several months.

* * * *

Dr. C. W. Bailey of Rocky Mount has two new associates, Dr. W. H. Mills and Dr. G. W. Phipps.

* * * *

Dr. James E. Best has announced the opening of offices for the practice of pediatrics in Greensboro.

* * * *

Dr. Walter Brodie Burwell has recently opened offices in Henderson for the practice of internal medicine.

* * * *

Dr. Rachel Davis of Kinston has announced that she is restricting her practice to gynecology, including sterility, endocrinology, proctology, and urology.

* * * *

Dr. Allen Whitaker of Rocky Mount is limiting his practice to urology and genitourinary surgery.

INTERIM SESSION OF THE AMERICAN MEDICAL ASSOCIATION

Registrations and hotel reservations are now being accepted for the second annual Interim Meeting of the American Medical Association at St. Louis, November 30 to noon, December 3, 1948.

Planned to be especially valuable to the general practitioner, the Interim Session will offer lecture meetings, conducted by medical leaders on conditions most often seen in daily practice. Subjects to be discussed include diabetes, heart disease, cancer, poliomyelitis, obstetrics, pediatrics, dermatology, genitourinary conditions, hypertension, anesthesia, tuberculosis, jaundice, laboratory diagnosis, x-ray diagnosis, and physical medicine as applied to the treatment of arthritis.

Diagnosis and treatment will be stressed in a wide variety of clinical conferences, which will be

correlated with the lecture meetings. Leading practitioners from all sections of the nation will conduct these conferences.

Evening programs will feature distinguished speakers, the award of the general practitioner medal, and fun.

A scientific exhibit with nearly 100 displays will show clinical and pathological material on subjects dealt with in the clinical conferences.

A registration form which enables the physician to save time by securing a registration card in advance is appearing in *The Journal of the American Medical Association* every other week until the Interim Meeting. A convenient blank for making reservations at a number of St. Louis' best hotels, which are within easy walking distance of the St. Louis Auditorium, is also printed in *The Journal*.

All reservations must be cleared through the Chairman, Subcommittee on Hotels, American Medical Association, Hotel Reservation Bureau, 1420 Syndicate Trust Building, St. Louis 1, Missouri, and must be received before November 9, 1948.

CANCER SEMINAR

The Cancer Seminar of the Southeastern States will be held on November 8, 9, and 10, 1948, at the Tampa Terrace Hotel, Tampa, Florida. The Seminar is under the direction of the Tumor Clinic, Tampa Municipal Hospital, Tampa, Florida, and is sponsored by the American Cancer Society, Florida Division, and the Florida State Board of Health.

The Cancer Seminar will consist of morning and afternoon panel discussions on carcinoma of the breast, lung, uterus, ovary, and stomach, and lymphoblastoma-leukemia. Each subject will be discussed by a surgeon or internist, a pathologist, and a roentgenologist. At the end of each panel discussion, thirty minutes will be allowed for questions submitted by the audience.

This Seminar is conducted for the doctors of the Southeastern states and is primarily intended for the benefit of physicians in the general practice of medicine; however, specialists in any field of medicine are urged to attend.

Requests for hotel accommodations should be sent to Mr. A. K. Dickinson, c/o Tampa Chamber of Commerce, Tampa, Florida, stating in your communication that you are attending the Cancer Seminar.

POSTGRADUATE COURSE IN OPHTHALMOLOGY AND OTOLARYNGOLOGY

The annual Postgraduate Course in Ophthalmology and Otolaryngology will be held at the University of Virginia Medical School, Charlottesville, Virginia, November 30 and December 1 for ear, nose and throat, and December 2 and 3 for the eye.

The following speakers will participate in the program.

Otolaryngology

Dr. LeRoy A. Schall, Boston, Mass.; Dr. Gilbert E. Fisher, Birmingham, Ala.; Dr. Russell A. Sage, Indianapolis, Ind.; Dr. J. Brown Farrior, Tampa, Fla.; Dr. Stacy R. Guild, Baltimore, Md.; Dr. Samuel Fomon, New York, N. Y.; Dr. Chalmers L. Gemmill, Charlottesville, Va.

Ophthalmology

Dr. Arthur J. Bedell, Albany, N. Y.; Dr. Alan C. Woods, Baltimore, Md.; Dr. Shaler A. Richardson, Jacksonville, Fla.; Dr. R. Townley Paton, New York, N. Y.; Dr. William C. Owens, Baltimore, Md.

The fee for the course is \$25.00 for the four days and \$15.00 for either part. Accommodations may be secured at the Monticello Hotel or the Albemarle Hotel, in Charlottesville.

NASHVILLE POSTGRADUATE MEDICAL ASSEMBLY

The Nashville Postgraduate Medical Assembly, sponsored by the Nashville Academy of Medicine, will be held at the Hermitage Hotel in Nashville, Tennessee, October 6 and 7.

NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

The twenty-eighth annual convention of the National Society for Crippled Children and Adults, Inc., will be held at the La Salle Hotel, Chicago, November 15-17.

Many outstanding speakers in the fields of medicine, health and education will be on hand to present facts on progress in work with the handicapped during the past year, according to Lawrence J. Linck, executive director.

The convention will be attended by physicians, therapists, educators, workers with the handicapped, and representatives of National Society's more than 2,000 state and local units throughout the United States, Canada, Alaska and Hawaii.

SOUTH ATLANTIC ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

The South Atlantic Association of Obstetricians and Gynecologists announces the establishment of "The Foundation Prize." Authors of papers on obstetrics or gynecologic subjects desiring to compete for the prize may obtain information from Dr. E. D. Colvin, secretary-treasurer, 1259 Clifton Road, N.E., Atlanta, Georgia.

AMERICAN UROLOGICAL ASSOCIATION

Urology Award

The American Urological Association offers an annual award of \$1000.00 (first prize of \$500.00, second prize \$300.00 and third prize \$200.00) for essays on the result of some clinical or laboratory research in urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals.

For full particulars write the secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis 3, Tennessee. Essays must be in his hands before February 15, 1949.

INSTITUTE OF GENERAL SEMANTICS

The fifty-ninth Seminar-Workshop of the Institute of General Semantics was held this summer at the Millbrook School, Millbrook, N. Y. Teachers and students, professionals and business men and women from more than twenty states and from Canada are spending four weeks learning how to apply the methods of general semantics to personal, professional, and world problems to achieve agreement and adjustment instead of confusion and conflict.

In addition to lectures by Alfred Korzybski, author of *Science and Sanity* and founder of the Institute, the group will hear from Dr. Douglas McG. Kelley, Chief Psychiatrist at the Nuremberg Jail and now at the Bowman Gray School of Medicine in North Carolina. He will tell the group of his experience with "group therapy" based on General Semantics methods and involving over 7000 combat fatigue cases in Europe. Other visiting consultants will represent the fields of medicine, education, and business.

THE ARTHRITIS AND RHEUMATISM FOUNDATION

A new organization, The Arthritis and Rheumatism Foundation, has been organized to promote a united nation-wide attack on arthritis and other rheumatic diseases. W. Paul Holbrook, M.D., Tucson, Arizona, president of the Foundation, has announced.

The new Foundation is sponsored by the American Rheumatism Association in cooperation with the National Arthritis Research Foundation, The Detroit Fund for Crippling Diseases, and others interested in bringing about a unity of effort in combatting one of the biggest problems confronting the medical profession—the seven and one-half million persons in the United States afflicted with arthritis or related disorders. Representatives of the three organizations are included in the seventeen prominent physicians and business men on the board of directors of the new Foundation, which has been incorporated in the state of New York.

The medical policies and activities of the new Foundation will be under the direction of a Medical and Scientific Committee now being organized.

AMERICAN HEART ASSOCIATION

The appointment of E. J. Ade as the first fund-raising director of the American Heart Association was announced recently by Dr. Tinsley R. Harrison, president of the Association.

Earlier this year, the American Heart Association and its local affiliates conducted their first nationwide public appeal for funds to combat heart disease, raising a total of nearly \$3,000,000.

THE RESEARCH COUNCIL ON PROBLEMS OF ALCOHOL

The third grant made this year for research on the problems of alcoholism by The Research Council on Problems of Alcohol was made public recently by Joseph Hirsh, Mr. Hirsh, acting director of The Research Council on Problems of Alcohol, announced that the grant of almost \$5,000 was being made available to the Chicago Committee on Alcoholism for the conduct of research work in one of the leading institutions in that city.

AMERICAN BOARD OF OPHTHALMOLOGY

Candidates for the certificate of the American Board of Ophthalmology are accepted for examination on the evidence of a written qualifying test. These tests are held annually in various parts of the United States. Registration is already closed for the next test, to be given in January, 1949. Applications are now being accepted for the 1950 written test. They will be considered in order of receipt until the quota is filled.

Practical Examinations for Acceptable Candidates 1949

San Francisco	March 21-24
New York	June 11-15
St. Louis	October 15-19
Boston	December

A supplementary list of diplomates from January 1948-January 1949 will be sent without charge to all purchasers of the Board's Directory. This supplementary material is arranged alphabetically and geographically. No biographical material is included.

Diplomates are urged to keep the Board office informed of all changes of address.

Executive Office, Cape Cottage, Maine.

NATIONAL SECURITY RESOURCES BOARD

Staffing of the Medical Division of the National Security Resources Board was virtually completed recently with the appointment of chiefs of four key sections.

Board Chairman Arthur M. Hill has assigned the new appointees to work under the direction of Dr. James A. Crabtree, Division Director. They are:

Rear Admiral Thomas Carlyle Anderson, MC, USN, in charge of a unit dealing with medical and related manpower;

Lt. Col. Howard B. Nelson, in charge of planning for health supplies;

Vincent B. Lamoreux, in charge of sanitary engineering aspects of national security;

Ruth Freeman, in charge of the Division's section on public health nursing.

(BULLETIN BOARD CONTINUED ON PAGE 494)

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BOOK REVIEWS

Diseases of the Nose, Throat, and Ear. By William Lincoln Ballenger, M.D., F.A.C.S., late Professor, School of Medicine, University of Illinois, Chicago; and Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University School of Medicine, Chicago; Surgeon, Department of Otolaryngology, Evanston Hospital, Evanston, Illinois; assisted by John Jacob Ballenger, B.S., M.D., Research Fellow in Otolaryngology, Northwestern University School of Medicine, Chicago. Ed. 9, thoroughly revised. 993 pages, with 597 illustrations and 16 plates. Price, \$12.50. Philadelphia: Lea & Febiger, 1947.

This textbook remains one of the most useful in print to the student as well as to the practitioner. Its fundamental information and its complete outline-form construction make it a ready reference.

The five main parts are entitled: "Nose and Accessory Sinuses"; "Pharynx and Fauces"; "Disorders of the Larynx"; "The Ear"; and "Bronchology, Esophagology and Gastroscopy."

In Part I a new section on rhinoplastic reconstruction briefly gives the fundamental steps in correcting nasal deformities. The section on headache outlines the causes of headache on an anatomic basis. A brief classification of the facial neuralgias in relation to the ear, nose, sinus, and pharynx is given.

Part III contains Dr. Kelly's revised technique for arytenoidectomy in the treatment of bilateral vocal cord paralysis of the abductor type. The operation leaves much to be desired in the management of this condition. The Woodman operation is not mentioned.

In Part IV a section on physiology and functional tests for the labyrinth only touches upon these subjects lightly. Very little of practical value to the clinician is given concerning the technique and interpretation of the caloric test.

Bibliographic references are numerous and can be used to supplement sections where subjects are not taken up in great detail.

Clinical Laboratory Methods and Diagnosis. By R. B. H. Gradwohl, M.D., D.Sc., F.R.S.T. M & H. (London), Director of the Gradwohl Laboratories and Gradwohl School of Laboratory Technique; Pathologist to Christian Hospital; Director, Research Laboratory, St. Louis Metropolitan Police Department, St. Louis, Mo.; Commander, Medical Corps, United States Naval Reserve, Ret. 3 volumes, illustrated. Price, \$40.00. St. Louis: The C. V. Mosby Company, 1948.

This work has been expanded now to a three-volume compendium of a mass of material. The emphasis has been on quantity of information rather than on the quality of it or on the selection of useful and important material. The work has become unwieldy. It is difficult to tell how the author intended for this work to be used. Much seems to be directed toward instruction of a complete novice, whereas other sections discuss at length and in detail highly specialized techniques such as the Papanicolaou examination of smears for malignant cells. The sections on autopsy technique and crime detection may be useful in highly isolated communities. The clinical interpretation of most of the tests is not attempted, yet a considerable discussion of interpretation of electrocardiograms—a highly technical subject—is included.

The color plates are of poor quality and often misleading in color value. The book is profusely padded with illustrations of equipment taken from manufacturers' catalogues. On the other hand, the illustrations in the section on parasitology are excellent and many are amazingly clear in detail. The cost of this work has risen with the size.

Fundamentals of Immunology. By William C. Boyd, Ph.D., Associate Professor of Biochemistry, Boston University School of Medicine. Ed. 2, completely revised and rewritten. 503 pages. Price, \$6.00. New York and London: Interscience Publishers, Inc., 1947.

This book is intended to serve as an introduction to immunology. It is written from the viewpoint of a chemist rather than that of a biologist, though the chief emphasis is on serologic reactions. A tremendous number of isolated facts have been accumulated. After a discussion of antibodies and antigens as such, the antigen-antibody reactions are discussed. There are summaries at the end of each chapter which attempt to tie together the major facts discussed. It is surprising how incomplete our knowledge is, in spite of the tremendous amount of effort which has been expended in the study of this subject.

Scattered throughout the text are schematic diagrams which illustrate the principles involved and the possible mechanism of action. The application of these facts and principles to legal medicine is pointed out as occasion arises throughout the book. There is a chapter on practical use of immune methods, and another on the techniques necessary in the laboratory and clinic.

The book is too detailed for the average course in immunology, but would serve as a reference book in serologic laboratories or in the offices of physicians concerned with infectious diseases and allergy. The point of view that immunity is a result of competition in the struggle for existence is an interesting concept.

Diseases of the Warm Climates. By Albert Dubois, M.D., Director of the Institute of Tropical Medicine, Antwerp, Belgium; and Louis van den Berghe, M.D., D.Sc., Director of the Institute for Scientific Research in Central Africa, Belgian Congo; Visiting Professor of Tropical Medicine, Tulane University, and Professor at the Institute of Tropical Medicine, Antwerp, Belgium. 445 pages, illustrated. Price, \$6.00. New York: Grune & Stratton, 1948.

This handy-sized volume is written for practicing physicians. The conclusions are based on the authors' long experience in the Belgian Congo. The diseases, however, are much the same the world over. The authors have avoided discussion of diseases which are readily recognized as occurring in temperate zones. There is a short section of general comments on diseases as they occur in warm climates. The emphasis on tuberculosis is well placed; its importance has often been overlooked in discussions of tropical diseases. There is a section on specific general infections, followed by a section on diseases which present symptoms referable to a particular system of the body. Such a classification will inevitably lead to the inclusion of some generalized diseases with those of a specific system. For instance, under skin diseases, leprosy, coccidioidomycosis, histoplasmosis, and yaws are included, although the authors recognize the general character of these infections. The section on trypanosomiasis is long and reflects the great experience of the authors with this disease. The section on malaria is complete.

More emphasis might have been given to prophylaxis and immunization. There are charts listing the diseases which occur in various geographical areas. A list of drugs, with synonyms used in various countries and the dosage, is appended. There is a chapter on technical and staining methods. No bibliography is included. The illustrations are of good quality and well reproduced on enameled paper. It is of interest that many of the illustrations of deficiency states were taken in North Carolina.

The book should be very useful for practitioners in the South and for medical students.

Dynamic Aspects of Biochemistry. By Ernest Baldwin, B.A., Ph.D., University Lecturer in Biochemistry, formerly Fellow of St. John's College, Cambridge. 457 pages. Price, \$4.00. New York: The Macmillan Company, 1947.

This delightful and stimulating book by an English author has an attractive and readable style. It is written as a text for advanced medical students, but should admirably serve for review and brush-up by practitioners. The author's stress on the dynamic aspects of the chemical reactions is in contrast to the usual discussions of spatial molecular configuration.

Part I is concerned with enzymes and their relation to biochemical processes. The discussion of catalysts is unusually lucid. There are summaries at the end of some chapters and simple graphs illustrating class experiments. The author has utilized an unusual graphic method of writing equations to illustrate the reversible nature and interrelationship of many chemical reactions. Part II is concerned with metabolism of proteins and amino acids, carbohydrates, and fats. The bibliography at the end of the book contains only a small number of selected general references.

Tuberculosis. By Francis Marion Pottenger, M.D., LL.D., F.A.C.P., Emeritus Professor of Medicine, University of Southern California, the School of Medicine; Medical Director, the Pottenger Sanatorium and Clinic for Diseases of the Chest, Monrovia, California. 597 pages, illustrated. Price, \$12.00. St. Louis: The C. V. Mosby Company, 1948.

This volume is concerned almost exclusively with a clinical discussion of pulmonary tuberculosis. The author has drawn from his long experience with the disease and has illustrated his points with many case reports. He stresses the curable nature of the disease and its mild infectivity. He contrasts the metastasizing, destructive character of some lesions with the localizing and healing tendency of others. Reproductions of chest films (both negative and positive prints), diagrams, and photographs are used. The reproduction on enameled paper is good, but the objective of the illustration is not always clear.

The concept of a primary infection serving as a prophylactic immunization is interesting, as is the discussion correlating the physical findings—usually atrophy—with the viscera and autonomic nervous system. The author sees the changes as resulting from reflex action.

The discussions on the pathogenesis of the tubercle and on the specific components in immunity are not as detailed as the clinical discussion. The section on the hematologic response, a very practical point for practicing physicians, is somewhat inadequate and omits some of the best references. A bibliography is included at the end of each chapter.

The book should serve as an interesting source of clinical facts that are frequently overlooked for people especially interested in the disease. It could hardly serve as a textbook for students. It is unfortunate that more of the knowledge of the chemotherapy of tuberculosis has not been included, for the book would then be of greater value to general practitioners and internists.

Modern Clinical Psychiatry. By Arthur P. Noyes, M.D., Superintendent, Norristown State Hospital, Norristown, Pennsylvania. Ed. 3. 525 pages. Price, \$6.00. Philadelphia and London: W. B. Saunders Company, 1948.

The new edition of this standard textbook is definitely superior to previous editions, which were good in their own right. For some time Dr. Noyes has been one of the leaders in American psychiatry. His writings reflect his soundness and thoroughness in clinical psychiatry. New chapters have been added, and other subject matter brought up to date in most respects.

It is interesting that Dr. Noyes clings to the time-honored classification of mental disorders and has not adopted the newer and more dynamically oriented groupings that came out of our war experience. This newer classification, which is more difficult for the student to grasp, has been accepted by the Army and the Veterans Administration. In the discussion of treatment Dr. Noyes has very little concerning pentothal abreaction or insulin subshock therapy, which are valuable adjuncts in the treatment of many of the milder psychiatric conditions.

Regardless of the above criticisms, this third edition of Noyes' textbook is recommended to students as a clear, sound, and readable book on clinical psychiatry.

Failures in Psychiatric Treatment. Edited by Paul H. Hoch, M.D. 241 pages. Price, \$4.50. New York: Grune and Stratton, 1948.

Under a most intriguing title, the editor has gathered together a number of essays presented at the thirty-seventh annual meeting of the American Psychopathological Association dealing with an ordinarily unwritten phase of psychiatry. One of the most difficult problems in dealing with mental disorders is that of following patients accurately for long periods of time. Surgical and medical patients usually select, and in most instances stay with one physician. Failures in treatment frequently result in autopsies where causes for failure can be better understood. Psychiatric patients, on the other hand, tend to drift from doctor to doctor, and since failures in treatment usually do not result fatally, live out their lifetimes in search of a cure. Physical diseases may develop in these individuals, as in anyone, and further occlude final evaluation. Finally, there is the whole unsolved problem of deciding when the treatment is a failure. The solution to this question hinges on what is desired in treatment. Does the patient merely want amelioration of his symptoms, or is he willing to accept certain complaints in exchange for return to adequate social function?

In fifteen papers these various problems are discussed, emphasis primarily being focused on specific types of treatment and the failure of each type of treatment in certain cases. Some of the essays are excellent, and the attempt to explain failures produces an excellent discussion of the original method. This is particularly true in the chapter dealing with psychobiology. Other fine discussions are those on hypnosis, psychotherapy with children, psychosomatic treatment, and physical therapies.

In general, these discussions are straightforward and reasonably complete. Occasionally the experts hedge, attempting to prove the value of their particular method of treatment, even in the face of failure. Probably the major fault of the volume lies in its failure to express more specifically the lack of knowledge possessed by psychiatry to date. There is no doubt but that most psychiatric methods are empirical, and consequently the application of a certain type of treatment to the wrong type of case is bound to produce a poor result. An honest appraisal of methods and techniques is essential if psychiatry is to develop progress in treatment. Bias for one method or another has no place in such an estimate. This volume is a good step in this direction. It is a book which must be read by all psychiatrists and neurologists, who should bear in mind that it is still just a beginning.

Doctors Like Things They Can Count On

Whether it's medicine, instruments, or professional literature, the up-and-coming doctor wants quality. In giving the best of his professional skill, he expects the best of those agencies and materials assisting him with his work.

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In Memoriam

W. HOUSTON MOORE, M.D.

Dr. W. Houston Moore was born in Warsaw, North Carolina, in 1880. He was educated in medicine at the University of North Carolina and at Jefferson Medical College, from which institution he received his M.D. in 1910. Dr. Moore died suddenly on July 23, 1948, of heart disease.

For thirty-seven years he has been an honored and faithful member of the New Hanover County Medical Society, of the Third District Medical Society, of the State Medical Society, and of the American Medical Association, and in each of them he has made a record of good and faithful service. He was twice president of the local society, and for six years he was a member of the twelfth board of State Medical Examiners. At his death he was on the staff of the James Walker Memorial Hospital and a member of the New Hanover County Board of Health.

Dr. Moore was a good doctor, respected by the general public, admired and trusted by his large clientele, honored by his associates, and beloved by his family. Not only was he interested in his chosen profession, but he also gave largely of his time and talents to civic affairs, and his wise counsel and efficient leadership will be greatly missed by all of those with whom he worked so faithfully toward the betterment and the beautification of the city he loved so well.

"Father in Thy Gracious keeping
Leave we now Thy Servant sleeping."

At a meeting of the New Hanover County Society on Tuesday, August 10, 1948, the following resolutions of respect were adopted:

WHEREAS it has pleased Almighty God in His infinite wisdom to call from the sphere of his earthly activities Dr. W. Houston Moore, and

WHEREAS The New Hanover County Medical Society is deeply conscious of the loss to them as individuals, and as a body in the passing of this valued member

BE IT RESOLVED: That high tribute be paid to him by the Society as a beloved physician, as a loyal co-worker, and as a faithful citizen whose death has saddened his associates and his many friends, and

BE IT FURTHER RESOLVED: That a copy of these resolutions be inscribed upon the permanent records of the Society and a copy be sent to his family and to the press.

Committee on Resolutions,
John B. Cranmer, M.D.
J. Buren Sidbury, M.D.
David R. Murchison, M.D.

Doctor Cronin Joins Schering's Medical Staff

Mr. Francis C. Brown, president of Schering Corporation, Bloomfield and Union, New Jersey, announces the appointment of Dr. David L. Cronin to the staff of the Division of Clinical Research as assistant to its director, Dr. Edward Henderson. Dr. Cronin, prior to receiving his degree of Doctor of Medicine from Georgetown University Medical School, obtained a B.S. degree from The City College of New York and an M.S. degree from the University of North Dakota.



at
Miami, Florida

AN INSPIRING MEDICAL MEETING—the Annual Meeting of the Southern Medical Association in Miami, Florida, October 25-28. In the general clinical sessions by Miami physicians and surgeons, the twenty-one sections and the scientific and technical exhibits, every phase of medicine and surgery will be covered—the last word in modern, practical, scientific medicine and surgery. Addresses and papers by distinguished clinicians not only from the South, but from many parts of the United States.

REGARDLESS of what any physician may be interested in, regardless of how general or how limited his interest, there will be at Miami a scientific program and recreational facilities to challenge his every interest and make it worth-while for him to attend.

ALL MEMBERS of state and county medical societies in the South are cordially invited to attend. And all members of state and county medical societies in the South should be and can be members of the Southern Medical Association. The annual dues of \$5.00 include the Southern Medical Journal, a journal valuable to physicians of the South, one that each should have on his reading table.

SOUTHERN MEDICAL ASSOCIATION

Empire Building

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Cook County Graduate School of Medicine

ANNOUNCES CONTINUOUS COURSES

SURGERY—Intensive Course in Surgical Technique, two weeks, starting Sept. 27, Oct. 25, Nov. 29.
Surgical Technique, Surgical Anatomy and Clinical Surgery, four weeks, starting Oct. 11, Nov. 8.
Surgical Anatomy and Clinical Surgery, two weeks, starting September 27, October 25, November 22.
Surgery of Colon and Rectum, one week, starting October 18, November 15.
Surgical Pathology every two weeks.
FRACTURES AND TRAUMATIC SURGERY—Intensive Course, two weeks, starting October 25.
GYNECOLOGY—Intensive Course, two weeks, starting October 11.
Vaginal Approach to Pelvic Surgery, one week, starting October 25.
OBSTETRICS—Intensive Course, two weeks, starting October 25.
UROLOGY—Intensive Course, two weeks, starting September 27.
MEDICINE—Intensive Course, two weeks, starting October 11.
Personal Course in Gastroscopy, two weeks, starting September 27, November 8.
Gastroenterology, two weeks, starting October 25.
Hematology, one week, starting October 4.
DERMATOLOGY—Formal Course, two weeks, starting October 4.
Clinical Course every two weeks.
OPHTHALMOLOGY—Intensive Course, two weeks, starting September 20.
Refraction Methods, four weeks, starting October 11.
Ocular Fundus Diseases, one week starting Nov. 15.
OTOLARYNGOLOGY—Intensive Course, two weeks, starting October 18.

GENERAL, INTENSIVE AND SPECIAL COURSES IN ALL BRANCHES OF MEDICINE, SURGERY AND THE SPECIALTIES
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TRANSACTIONS OF THE AUXILIARY

to the Medical Society of the State of North Carolina

TWENTY-FIFTH ANNUAL SESSION

Held at Pinehurst, May 4, 1948

OFFICERS, 1947-1948

President.....	Mrs. W. Reece Berryhill, Chapel Hill
President-Elect.....	Mrs. Raymond Thompson, Charlotte
Chairman of Past Presidents	—Mrs. P. P. McCain, Southern Pines
First Vice President and Chairman of Organization.....	Mrs. Frederick Taylor, High Point
Second Vice President and Chairman of Activities.....	Mrs. Watson Roberts, Durham
Corresponding Secretary	—Mrs. Fred Patterson, Chapel Hill
Treasurer.....	Mrs. E. C. Judd, Raleigh
Recording Secretary	—Mrs. David Cayer, Winston-Salem

STANDING COMMITTEES 1947-1948

Program.....	Mrs. Harry Johnson, Elkin
Public Relations.....	Mrs. Milton Clark, Goldsboro
Legislative.....	Mrs. C. P. Eldridge, Raleigh
Press and Publicity	—Mrs. Coy Carpenter, Winston-Salem
Bulletin.....	Mrs. Wingate Johnson, Winston-Salem
Hygeia.....	Mrs. Taylor Vernon, Morganton
Memorial.....	Mrs. H. H. Foster, Norlina
Historian.....	Mrs. Herbert Ogburn, Greensboro
Scrapbook.....	Mrs. R. A. Moore, Winston-Salem
Jane Todd Crawford Memorial	—Mrs. C. S. Barker, New Bern
Doctors' Day.....	Mrs. Walter Summerville, Charlotte
Revisions.....	Mrs. J. Buren Sidbury, Wilmington
Nominations.....	Mrs. George Carrington, Burlington
Student Loan Fund	—Mrs. F. Norman Bowles, Durham
McCain Bed.....	Mrs. Wm. P. Richardson, Chapel Hill
Stevens Bed.....	Mrs. G. M. Billings, Morganton
Cooper Bed.....	Mrs. M. I. Fleming, Rocky Mount

COUNCILORS

First District	Unorganized
Second District.....	Mrs. Thomas L. Lee, Kinston
Third District.....	Mrs. C. B. Davis, Wilmington
Fourth District.....	Mrs. J. W. Rose, Pikeville
Fifth District.....	Mrs. A. L. O'Briant, Raeford
Sixth District.....	Mrs. W. T. Ward, Raleigh
Seventh District.....	Mrs. Charles Nance, Charlotte
Eighth District.....	Mrs. C. V. Tyner, Leaksville
Ninth District.....	Mrs. Alfred Kent, Granite Falls
Tenth District	—Mrs. Charles D. Thomas, Black Mountain
North Carolina Councilor to Southern Medical Auxiliary.....	Mrs. Clyde Hedrick, Lenoir

ADVISORY BOARD

Rachel D. Davis, M.D., Chairman.....	Kinston
Annie Louise Wilkerson, M.D.....	Raleigh
Annie T. Smith, M.D.....	Durham
Lois Foote Stanford, M.D.....	Durham
Olivia Abernethy, M.D.....	Elkin

PAST PRESIDENTS

1923 (Organizing Chairman)	Mrs. P. P. McCain, Sanatorium
1924.....	Mrs. P. P. McCain, Sanatorium
1925.....	Mrs. I. W. Faison, Charlotte
1926.....	Mrs. J. Howell Way, Waynesville
1927.....	Mrs. R. S. McGeachy, Kinston
1928.....	Mrs. B. J. Lawrence, Raleigh
1929.....	Mrs. A. B. Holmes, Fairmont
1930.....	Mrs. J. H. Macon, Warrenton
1931.....	Mrs. W. B. Murphy, Snow Hill
1932.....	Mrs. R. S. McGeachy, Greenville
1933.....	Mrs. W. P. Knight, Greensboro
1934.....	Mrs. J. W. Huston, Asheville
1935.....	Mrs. J. Buren Sidbury, Raleigh
1936.....	Mrs. C. P. Eldridge, Raleigh
1937.....	Mrs. J. R. Terry, Lexington
1938.....	Mrs. W. T. Rainey, Fayetteville
1939.....	Mrs. Joseph A. Elliott, Charlotte
1940.....	Mrs. C. F. Strosnider, Goldsboro
1941.....	Mrs. Clyde R. Hedrick, Lenoir
1942.....	Mrs. Sidney Smith, Raleigh
1943.....	Mrs. R. A. Moore, Winston-Salem
1944.....	Mrs. K. B. Pace, Greenville
1945.....	Mrs. J. T. Saunders, Asheville
1946.....	Mrs. Erick Bell, Wilson
1947.....	Mrs. Frederick Taylor, High Point

CONVENTION PROGRAM

MONDAY, May 3

8:30 p.m.—Bingo Party, Mrs. George Heinitsh, Chairman

TUESDAY, May 4

9:00 a.m.—Executive Board Meeting
 10:30 a.m.—Annual Meeting
 1:00 p.m.—Silver Anniversary Luncheon—Mrs. W. F. Hollister, Chairman
 4:00 p.m.—Tea honoring Mrs. W. Reece Berryhill, Mrs. Raymond Thompson, Mrs. J. F. Robertson, and past presidents—Mrs. Thomas N. Lide, Chairman
 7:00 p.m.—Medical Society Banquet
 10:00 p.m.—Medical Society Ball

WEDNESDAY, May 5

10:00 a.m.—Bridge Party—Mrs. R. M. McMillan, Chairman

PRE-CONVENTION MEETING OF THE EXECUTIVE BOARD

Tuesday, May 4

Minutes

The Executive Board of the Auxiliary to the Medical Society of the State of North Carolina met in the Pine Room of the Carolina Hotel, Pinehurst, on May 4, 1948, at 9 a.m. with Mrs. W. Reece Berryhill, the president, presiding.

Mrs. Berryhill gave the invocation, followed by the greeting and welcome to the Board members, and expressed gratitude for the cooperation shown by the members during the year.

The minutes of the fall Board meeting were read and approved. The following reports of the officers were accepted and filed:

Mrs. P. P. McCain, chairman of past presidents (verbal report)

Mrs. Raymond Thompson, president-elect

Mrs. Frederick R. Taylor, first vice president

Mrs. B. Watson Roberts, second vice president

Reports from the following district councilors were read, accepted and incorporated in the transactions:

First District—(Unorganized)

Second District, Mrs. T. Leslie Lee

Third District, Mrs. C. B. Davis

Fourth District, Mrs. J. W. Rose (absent)

Fifth District, Mrs. A. L. O'Briant

Sixth District, Mrs. W. T. Ward (absent)

Seventh District, Mrs. Charles L. Nance

Eighth District, Mrs. C. V. Tyner (absent)

Ninth District, Mrs. A. A. Kent, Jr.

Tenth District, Mrs. C. D. Thomas

Other reports that were read and filed were as follows:

Student Loan Fund, Mrs. F. Norman Bowles (absent)

McCain Bed, Mrs. W. P. Richardson

Stevens Bed, Mrs. G. M. Billings

Cooper Bed, Mrs. M. I. Fleming. A letter of appreciation from H. O. Pearson, M.D., occupant of the Cooper Bed, was read. In response to the recommendation in the letter from Dr. H. F. Easom, medical director of the Eastern N. C. Sanatorium at Wilson, it was moved, seconded and carried that Mrs. Eunice Lipham, 20-year-old widow, be accepted for the Cooper Bed.

Program, Mrs. Harry Johnson

Scrapbook, Mrs. R. A. Moore

Press and Publicity, Mrs. C. C. Carpenter

Memorials, Mrs. H. H. Foster

Jane Todd Crawford Memorial, Mrs. C. S. Barker

Legislative, Mrs. C. P. Eldridge

Bulletin, Mrs. Wingate Johnson

Research, Mrs. Joseph Elliott (absent because of illness). A motion was made and passed that a letter of regret for her absence be sent.

Doctors' Day, Mrs. Walter Summerville

Councilor to Southern Medical Auxiliary, Mrs. Clyde Hedrick.

The historian, Mrs. Herbert Ogburn, was absent and no report was given.

Dr. Rachel Davis, Advisory Board Chairman, commended the Auxiliary for its help in the program for the recruitment of nurses, and encouraged greater promotion of the Auxiliary's work.

The Board then adjourned to meet with the General Session.

Respectfully submitted,
MRS. DAVID CAYER,
Recording Secretary

GENERAL SESSION

Tuesday, May 4

Minutes

The Auxiliary to the Medical Society of the State of North Carolina held its twenty-fifth annual meeting Tuesday, May 4, 1948, at 11:00 o'clock in the Pine Room of the Carolina Hotel, with Mrs. W. Reece Berryhill, president, presiding.

The meeting was opened with an invocation led by Mrs. P. P. McCain, the organizing chairman. Mrs. H. E. Bowman, president of the Moore County Auxiliary, gave the address of welcome, and Mrs. Harry Johnson responded for the State Society. The memorial service was conducted by Mrs. H. H. Foster in memory of the members who had died during the year.

Dr. Annie Louise Wilkerson, member of the Advisory Board, was introduced by Mrs. Berryhill. The district councilors were introduced by Mrs. Taylor, first vice president and chairman of organization, and the councilors, in turn, introduced their county presidents, then gave their reports. As second vice president and chairman of activities, Mrs. Watson Roberts gave her report and called for the reports of the Bed Fund chairmen.

Mrs. Berryhill expressed appreciation for the excellent work of the corresponding secretary, Mrs. Fred Patterson. The president then asked for a motion from the floor to dispense with the reading of the minutes, since they appeared in the September, 1947, issue of the *North Carolina Medical Journal*. The motion was made, seconded, and carried.

Following the acceptance of the report of Mrs. E. C. Judd, the treasurer, the president called for a rising vote of thanks for Mrs. Judd's untiring efforts.

Mrs. Taylor took the chair while the president, Mrs. Berryhill, gave her report, which was accepted. Committee chairmen received recognition from the president, and reports were given by Mrs. Taylor Vernon, Hygeia, and Mrs. Milton Clark, Public Relations.

A memorial tribute for Dr. Frank Sharpe was read by Mrs. Berryhill.

Dr. J. F. Robertson brought greetings from the Medical Society of the State of North Carolina and commended the Auxiliary for its support and cooperation. He outlined the plan of the Medical Care Commission in securing funds for a hospital and medical school at Chapel Hill, and for hospitals and diagnostic clinics throughout the state where people can support them. Dr. Robertson stressed the need for the training of practical nurses and urged the Auxiliary to continue to exert its influence in the recruitment of nurses.

The chairman of the Advisory Board, Dr. Rachel Davis, reported that the House of Delegates of the Medical Society had applauded her presentation of the activities and accomplishments of the Auxiliary. Dr. Davis included in her earnest appeal for increased interest in the nurse recruitment program the suggestion that the Auxiliary make a study of the possibilities for aiding young girls who are unable to pay for nursing training. Following Dr. Davis' address, Mrs. A. C. Bulla announced that a three-year scholarship is offered at Rex Hospital, Raleigh.

Mrs. J. Buren Sidbury, chairman of Revisions, reported that a copy of the revisions will be sent to each county president. The following motions were made, seconded, and carried: (1) that doctors' widows be made full members of the Auxiliary; (2) that past presidents be members of the Board of Directors; (3) that all mention of the Southern

Medical Auxiliary be omitted; and (4) that the books of the Auxiliary be closed each June 30.

The Davis Cup and \$25.00 (donated by Dr. Rachel Davis) was awarded by Mrs. A. C. Bulla to the Eighth District for outstanding improvement and achievement. In the absence of Mrs. C. V. Tyner, councilor for the district, Mrs. Harry Johnson accepted the award.

In the discussion of the annual meeting of the American Medical Association to be held in June, at Chicago, a motion was made and carried that the appointment of the delegates and alternates be placed in the hands of the president.

Mrs. George Carrington, chairman of the nominating committee, presented the slate of officers, and acceptance was unanimous. To a recommendation that the nominating committee commence its work at the fall Board meeting, since most of the committee work is carried on by correspondence, Mrs. Sidbury reminded the group that said committee cannot be appointed until the fall meeting.

Mrs. P. P. McCain conducted an impressive installation service for the new officers, while the members of the session stood in recognition.

Mrs. Berryhill presented the gavel to Mrs. Raymond Thompson, who emphasized in her inaugural remarks that education along medical lines is the task of the organization. Mrs. Thompson announced her donation of an award for the largest increase in membership, following which two other donations were pledged: Mrs. P. P. McCain for the first full membership and Mrs. Charles E. Flowers for the largest contribution in the Cancer Drive.

There being no further business, the meeting was adjourned.

Respectfully submitted,
MRS. DAVID CAYER,
Recording Secretary

Report of the President

As president of your Auxiliary, I am happy to submit the following report.

Last September, when your Board of Directors met in Southern Pines at the home of Mrs. P. P. McCain to formulate plans for the year's work, the late Dr. Frank Sharpe of Greensboro, president of the Medical Society, asked us to help with the Recruiting Campaign for Student Nurses. Mr. Louis Connor, the Public Relations Director of the Hospital Saving Association, talked about the tour that "Miss North Carolina Student Nurse" was going to make to high schools in the larger towns in the state. Mr. Connor also talked about the Blue Cross Plan and offered suggestions for programs in county groups.

Mrs. Harry Johnson, our able chairman of the Program Committee, in her program suggestions emphasized nurse recruitment and the Blue Cross Plan.

As I have gone over the reports of each county organization it has been thrilling to see how you have carried out the plans and suggestions that were presented in our fall Board meeting. In many cases your accomplishments have been even greater than the goal set up for you.

Our main project has been the support of a bed in each of the three sanatoria: the Stevens Bed in the Western Sanatorium, the McCain Bed in the central section of the state at McCain, the Cooper Bed in the eastern section at Wilson. These beds have been occupied by different nurses, a doctor, and a practical nurse. You have heard a detailed report of this from Mrs. Roberts.

As your president, I have attended five auxiliary meetings as guest speaker. I have been to a district meeting as guest speaker. I have participated in a

district nurses' meeting and two of the counseling sessions in the Nurse Recruiting Campaign. I attended a Doctors' Day dinner in a neighboring state. I regret not being able to accept invitations to visit five other auxiliaries.

You have heard from Mrs. Taylor about the new auxiliaries formed. We welcome the new organizations and look forward to the day when each medical society has its own active auxiliary. Our paid memberships to date are 1,168.

This has been a year of rich and warm experiences for me. I value the opportunity I have had to know other medical families in North Carolina. As I said to you last year, I say again: if I have even in a small way been able to cause the wheels of this organization to go around in such a manner as to give others the fellowship and inspiration I have gained, I will feel gratified with my efforts during the year.

May I at this time pledge my loyal support to Mrs. Raymond Thompson, the incoming president, and to her Board, and wish for all of us a year of happy endeavor working for the good of the profession we honor and cherish.

Respectfully submitted,
MRS. W. REECE BERRYHILL

Report of the President-Elect

I attended the Board meeting September 30 at the home of Mrs. P. P. McCain in Southern Pines. This was a very inspirational meeting.

I have tried to prepare myself in Auxiliary work by reading and attending meetings.

I attended the Ninth District meeting in Mooresville, and at the request of Mrs. Alfred Kent, councilor, made a short talk. I also attended the organizational meeting of the Gaston County Medical Auxiliary and spoke to them. I attended Mecklenburg County Auxiliary meeting.

MRS. RAYMOND THOMPSON

Report of the First Vice President and Chairman of Organization

As Organization Chairman of the Auxiliary, I wish to submit the following report for 1947-48.

All councilors have been contacted, each supplied with form letters and instruction sheets to be used in soliciting the cooperation of medical societies. All letters and questions have been answered promptly. In February letters and questionnaires were sent to each councilor for instruction and to aid in making her year's report.

District 2—Mrs. Leslie Lee, councilor, reports one new auxiliary, combining Martin, Washington and Tyrrell counties.

District 4—Mrs. J. W. Rose, councilor, reports a splendid year of Auxiliary work, with only one county unorganized. She is hopeful of bringing Halifax into the fold very soon.

District 6—Mrs. W. T. Ward, councilor, gave a splendid report of work accomplished. I am sorry to report the inactivity of Person County. There are only two doctors in the county.

District 7—Mrs. C. L. Nance, councilor, organized Gaston County.

District 8—Mrs. C. V. Tyner, councilor, has two unorganized counties, Wilkes and Alleghany, in the process of being organized. Mrs. Harry Johnson organized Surry-Yadkin too late to be included in the 1947 report. However, we are delighted to give credit where credit is due.

District 9—Mrs. Alfred A. Kent, Jr., councilor, is hopeful of organizing Watauga-Ashe counties.

District 10—Mrs. Charles D. Thomas, councilor, organized Mitchell and Yancey into one auxiliary.

Districts 3 and 5 have not submitted their reports.

It is very gratifying to report nine new counties with only one discontinued. We now have thirty-eight organized counties.

May I take this opportunity to thank each councillor for her splendid cooperation. It has been a joy to work with you.

Respectfully submitted,
MRS. F. R. TAYLOR

Report of the Second Vice President and Chairman of Activities

For the new people in the audience who do not know that we keep up three Sanatorium beds for doctors, nurses or their families, I want to say that the good our projects do was brought home to us in Durham this spring when the McCain Bed guest, Miss Lena Aman, was a patient at Duke Hospital on April 12 for a pneumonectomy, having her right lung removed. She had a very difficult time, for her good lung almost collapsed during the operation. Members of the Durham-Orange Auxiliary saw Miss Aman before she underwent her operation and when she could have visitors. Having a hand in helping a person regain her health is now more of a reality to us than ever before. While Miss Aman was at Duke, Miss Billie Scull, a nurse from Fayetteville, occupied the bed.

The occupants of the Stevens Bed at Black Mountain were Miss Liselotte Schumann and Miss Florence Matthews, whom many of us know because she occupied the McCain Bed for several years. She was doing part-time nursing at the Western N. C. Sanatorium when she began running fever and was put to bed again. She expects to go home soon now.

The Cooper Bed has been occupied during the past year by Mrs. Elenna Sutton of Rocky Mount and Dr. H. O. Pearson of Pinetops. During the past two weeks Mrs. Fleming has received funds to the amount of \$300.00 for the Cooper Bed.

Mrs. Bowles reports that there have been no calls upon the Student Loan Fund this year, so the Fund is intact. There has been very little donated to the Student Loan Fund because our emphasis has been on completing the McCain Endowment Fund, but even small donations help. Scotland County and Durham-Orange are two that made small donations that I happen to know about.

This year we divided the state into three districts to serve each of the Sanatoria beds, so that the McCain Bed Chairman, for example, writes to only one third of the counties in the soliciting of donations or remembrances at Christmas for that bed patient or for anything needed as to gifts. The money is handled as always—with money to run them in a central fund and each endowment fund separate. Mrs. Judd will give the financial report.

Being second vice president has been as easy as the name implies. I have thoroughly enjoyed working with my splendid chairmen and president.

MRS. B. WATSON ROBERTS

McCain Bed Chairman

Miss Lena Aman, our guest in the McCain Bed since December, 1946, was taken on April 12 to Duke Hospital for a pneumonectomy, having the right lung removed. During her six-week absence Miss Billie Scull, a nurse from Fayetteville, occupied the bed.

Miss Aman has had a difficult time, but we all hope that she will have a rapid recovery. She is extremely grateful for the many tokens of affection from the members of the Auxiliary throughout the year, and particularly during her stay at Duke.

Letters were sent to my third of the state during the year reminding auxiliaries of our earnest desire to complete the McCain Endowment Fund, and of our guest in the McCain Bed.

The financial report will be given by the treasurer.

Respectfully submitted,
MRS. W. P. RICHARDSON

Stevens Bed Chairman

As chairman of the Stevens Bed, I wish to submit the following report:

The occupant of the bed was Miss Liselotte Schumann. When she left the hospital in July, she stayed in Black Mountain several months so that she could continue treatment at the sanatorium. During a visit to Neponsit, New York, she became ill, and the last word received from her was that she was awaiting transportation to her family in Germany.

The present occupant is Miss Florence Matthews, who had occupied the McCain Bed for several years. While doing part-time nursing at the Western North Carolina Sanatorium, she became ill. The recent report is that she will return to her home soon.

We followed the same program as last year: gifts and cards were sent to Miss Matthews on holidays. The Burke County Auxiliary sent a check for thirty-five dollars with their Christmas box. All the counties responded well.

During the fall, I made talks before the Caldwell County Auxiliary and the Buncombe County Auxiliary telling about the Stevens Bed. At the Buncombe County meeting, a silver offering was taken for the Stevens Bed Endowment Fund.

The financial report will be presented by Mrs. Judd, treasurer.

Respectfully submitted,
MRS. G. M. BILLINGS

Cooper Bed Chairman

The Cooper Bed has been occupied the past year by Mrs. Elenna Sutton of Rocky Mount and Dr. H. O. Pearson of Pinetops. Mrs. Sutton was discharged around the middle of November, and is at present doing part-time work at Park View Hospital, apparently recovered. She is most grateful for the assistance extended to her by the use of the Cooper Bed. Dr. Pearson became our guest immediately after Mrs. Sutton's release from the Sanatorium and has occupied the bed until about two weeks ago, when he was allowed to go home with the understanding that he work only a few hours during the day in the capacity of office consultant. He is being checked by the doctors in the Sanatorium periodically to be sure that he does not have a recurrence. He came to call on me a few days ago and expressed his gratitude for the kindness and attention shown him while a patient at the Sanatorium.

During the year our guests have been visited monthly by several of the doctors' wives. Useful remembrances were taken to the patients on these visits. Several yearly magazine subscriptions have been sent by different auxiliaries. At Christmas our guest was remembered by many individuals and by the Auxiliary as a whole. Altogether we have had a most successful year. During the past two weeks I have received, as gifts from various friends of mine, funds to the amount of \$350.00, for which I am most grateful.

Respectfully submitted,
MRS. M. I. FLEMING

Student Loan Fund Chairman

No requests for loans have been made since 1946. All former loans have been paid.

Respectfully submitted,
MRS. F. NORMAN BOWLES

Report of the Treasurer

The report of the treasurer's records for the year 1947-1948 is herewith submitted. All accounts have been recorded and disbursed according to the By-Laws.

It was a pleasure to serve with our most efficient president, Mrs. W. Reece Berryhill, who steered the Auxiliary to greater accomplishments. My sincere thanks to Mrs. Berryhill, each member of the Executive Board, and all county auxiliary presidents and treasurers for their wonderful cooperation.

Herewith is appended the auditor's report covering in detail the activities of the treasurer's office for the past year.

Respectfully submitted,
MRS. E. C. JUDD

Auditor's Report

July 28, 1948

Mrs. E. C. Judd, Treasurer

The Auxiliary to the Medical Society of the
State of North Carolina
2108 Woodland Avenue
Raleigh, North Carolina

Dear Madam:

In accordance with your request, we have examined the books and records of your Auxiliary for the period from July 1st 1947 to June 30th 1948 and submit herewith the following statements:

EXHIBIT A Balance Sheet

EXHIBIT B Summary of Receipts and Disbursements

Schedule B-1 Receipts and Disbursements—
General Expense Fund
Schedule B-2 Receipts and Disbursements—
District Achievement Prize Fund
Schedule B-3 Receipts and Disbursements—
Sanatoria Bed Fund
Schedule B-4 Receipts and Disbursements—
Martin L. Stevens Endowment Fund
Schedule B-5 Receipts and Disbursements—
McCain Endowment Fund
Schedule B-6 Receipts and Disbursements—
Student Loan Fund
Schedule B-7 Receipts and Disbursements—
George M. Cooper Endowment Fund

We inspected securities on hand and obtained confirmation from the depository in verification of bank balances. Your records were found to be in excellent condition.

Certificate

We certify that, in our opinion, the accompanying statements fairly reflect the financial condition of the Auxiliary at June 30th 1948 and the results from operations for the year then ended upon the basis of accounting records consistently maintained.

Respectfully submitted,
R. L. STEELE & COMPANY
By: R. L. Steele, C.P.A.

(Exhibits A and B are to be found on the next page)

Schedule B-1**Receipts and Disbursements****General Expense Fund**

Year Ended June 30th 1948

Balance on Deposit—July 1st 1947.....\$ 242.04

Receipts:

Dues 1947-48 (1,168 members @
\$1.00) (½ to Sanatoria Bed
Fund) 584.00

\$ 826.04

Disbursements:

Auditing Fee\$ 50.00
Stationery, Postage, Printing
and other Office Expense..... 258.09
Flowers 15.45
Safety Deposit Box Rent..... 3.60
Mrs. Arthur Herold, National
Treasurer (Dues 1,168 @ .25) 292.00 619.14

Balance on Deposit June 30th 1948.....\$ 206.90
(To Exhibit B)

Schedule B-2**Receipts and Disbursements****District Achievement Prize Fund**

Year Ended June 30th 1948

Balance on Deposit July 1st 1947.....\$ 25.00

Disbursements:

District Achievement Prize to 8th District.. 25.00

Balance on Deposit June 30th 1948.....\$ —

Schedule B-3**Receipts and Disbursements****Sanatoria Bed Fund**

Year Ended June 30th 1948

Balance on Deposit July 1st 1947.....\$ 409.55

Receipts:

Contributions\$ 209.25
Dues 1947-48 (1,168 members
@ \$1.00) 584.00 793.25

(½ to General Fund).....\$1,202.80

Disbursements:

N. C. Sanatorium\$ 152.50
W. N. C. Sanatorium..... 185.74
E. N. C. Sanatorium..... 168.13 506.37

Balance on Deposit June 30th 1948.....\$ 696.43

Schedule B-4**Receipts and Disbursements****Martin L. Stevens Endowment Fund**

Year Ended June 30th 1948.

Balance in Savings Account—July 1st 1947..\$ 814.38

Receipts:

Contributions\$1,205.45
Government Bond Interest 50.00
Savings Account Interest 15.57 1,271.02

Balance in Savings Account
June 30th 1948\$2,085.40

Schedule B-5**Receipts and Disbursements****McCain Endowment Fund**

Year Ended June 30th 1948

Balance in Savings Account July 1st 1947....\$ 695.77

Receipts:

Contributions\$ 682.25
8th District Achievement Prize 25.00
Savings Account Interest..... 13.80 721.05

Balance in Savings Account
June 30th 1948.....\$1,416.82

Schedule B-6**Receipts and Disbursements****Student Loan Fund**

Year Ended June 30th 1948

Balance in Savings Account July 1st 1947....\$ 673.83

Exhibit A
Balance Sheet
As of June 30th 1948

<i>Assets</i>	<i>Total</i>	<i>General Expense Fund</i>	<i>Sanatoria Bed Fund</i>	<i>Martin L. Stevens Endowment Fund</i>	<i>McCain Endowment Fund</i>	<i>Student Loan Fund</i>	<i>George M. Cooper Endowment Fund</i>
Cash in Bank (Exhibit B).....	\$6,088.88	\$206.90	\$696.43	\$2,085.40	\$1,416.82	\$ 741.62	\$ 941.71
Investments:							
U.S. Defense Savings Bonds of 10-1-41—Series F. Mature 12 years from date. Maturity value \$2,800.00	2,072.00	—	—	—	2,072.00	—	—
U. S. War Savings Bonds of 6-1-43—Series F. Mature 12 years from date. Maturity value \$1,500.00	1,110.00	—	—	—	1,110.00	—	—
U. S. War Savings Bonds of 6-1-44—Series F. Mature 12 years from date. Maturity value \$500.00	370.00	—	—	—	370.00	—	—
U. S. War Savings Bonds of 9-1-43—Series F. Mature 12 years from date. Maturity value \$325.00	240.50	—	—	240.50	—	—	—
U. S. War Savings Bonds of 4-1-45—Series G. 2½% interest payable semi-annually	1,000.00	—	—	1,000.00	—	—	—
U. S. War Savings Bonds of 6-1-45—Series F. Mature 12 years from date. Maturity value \$500.00	370.00	—	—	—	370.00	—	—
U. S. War Savings Bonds of 6-30-45—Series F. Mature 12 years from date. Maturity value \$1,000.00	740.00	—	—	—	—	740.00	—
U. S. War Savings Bonds of 6-1-47—Series G. 2½% interest payable semi-annually	1,000.00	—	—	1,000.00	—	—	—
U. S. War Savings Bonds of 6-1-47—Series F. Mature 12 years from date. Maturity value \$3,500.00	2,590.00	—	—	—	1,850.00	—	740.00
TOTAL ASSETS	\$15,581.38	\$206.90	\$696.43	\$4,325.90	\$7,188.82	\$1,481.62	\$1,681.71
TOTAL SURPLUS	\$15,581.38	\$206.90	\$696.43	\$4,325.90	\$7,188.82	\$1,481.62	\$1,681.71

Exhibit B
Summary of Receipts and Disbursements
Year Ended June 30th 1948

	<i>Cash Balance 7-1-47</i>	<i>Receipts</i>	<i>Disbursements</i>	<i>Cash Balance 6-30-48</i>
General Expense Fund (Schedule B-1).....	\$ 242.04	\$ 584.00	\$ 619.14	\$ 206.90
District Achievement Prize Fund (Schedule B-2).....	25.00	—	25.00	—
Sanatoria Bed Fund (Schedule B-3).....	409.55	793.25	506.37	696.43
Total Wachovia General Checking Account.....	\$ 676.59	\$1,377.25	\$1,150.51	\$ 903.33
Martin L. Stevens Endowment Fund (Schedule B-4) (Wachovia Savings Account)	814.38	1,271.02	—	2,085.40
McCain Endowment Fund (Schedule B-5)..... (Wachovia Savings Account)	695.77	721.05	—	1,416.82
Student Loan Fund (Schedule B-6)..... (Wachovia Savings Account)	673.83	67.79	—	741.62
George M. Cooper Endowment Fund (Schedule B-7) (Wachovia Savings Account)	367.54	574.17	—	941.71
TOTAL ALL FUNDS (to Exhibit A).....	\$3,228.11	\$4,011.28	\$1,150.51	\$6,088.88

Receipts:

Contributions	\$ 54.30	
Savings Account Interest.....	13.49	67.79

Balance in Savings Account

June 30th 1948\$ 741.62

Schedule B-7**Receipts and Disbursements****George M. Cooper Endowment Fund**

Year Ended June 30th 1948

Balance in Savings Account July 1st 1947.....\$ 367.54

Receipts:

Contributions	\$ 568.65	
Savings Account Interest.....	5.52	574.17

Balance in Savings Account

June 30th 1948.....\$ 941.71

Memorial Service**Mrs. H. H. Foster**

"I will not leave you comfortless: I will come to you. Yet a little while and the world seeth me no more: but ye see me: because I live, ye shall live also."
—John 14:18-20.

Will you please stand while I read the names of our members who, since last year, have been called to their eternal rest.

Mrs. Henry Sloan, Charlotte—August, 1947

Mrs. J. T. Burrus, High Point

Mrs. John Symington, Carthage—May 24, 1947

Mrs. Edward R. Hines, Rocky Mount—April 28, 1948

Mrs. R. B. Whitaker, Whiteville—October 5, 1947

Mrs. W. K. McCain, High Point—September 10, 1947

Mrs. G. M. Cooper, Raleigh

Mrs. H. C. Shirley, Charlotte

Let us pray:

O Lord, we thank Thee for the lives of these good women, who since our last meeting, have answered Thy call. Be very near to their loved ones and comfort them in their loss. May we who are here today give our lives to Thy service and in so doing, be ready when thou shalt see fit to call us home; "for the Son of Man cometh at an hour when ye think not." Amen.

Please be seated.

There Is No Death

I tell you they have not died,
They live and breathe with you;
They walk here at your side
They tell you things are true.
Why dream of popped sod
When you can feel their breath
When flow'r and soul and God
Knows there is no death!

Death's but an open door
We move from room to room
There is one life, no more
No dying and no tomb.
Why seek ye them above
Those that ye love dear?
The all of God is love,
The all of God is here.

I tell you they have not died
Their hands clasp yours and mine,
They are but glorified
They have become divine.

They live! they know! they see!
They shout with every breath:
Life is eternity
There is no death.

—Gordon Johnston

Report of the Second District Councilor

As retiring councilor of the Second District, I wish to submit the following report.

This district is composed of eleven counties—Pitt, Jones, Beaufort, Carteret, Craven, Lenoir, Martin-Washington-Tyrrell, Hyde, and Pamlico—with seven county medical societies and four medical auxiliaries. The organized counties are Pitt, Craven, Lenoir, and Martin-Washington-Tyrrell. The last named is a new Auxiliary. It shall be known as the Auxiliary to the Tri-County Medical Society. This gives us three more counties to add to our list of organized counties. This auxiliary was organized on April 1 of this year. I had the pleasure of attending their second meeting in Williamston on April 20, which was very inspiring. There was quite a bit of enthusiasm noted among this group and I feel confident that we can expect great things from this auxiliary. This leaves only five unorganized counties in this District. Of these five, only three have a medical society, and one of these has only four members—all honorary.

My year's work began with my attending the fall meeting of the Executive Board in Southern Pines. I came home filled with enthusiasm and a determination to do "big things." I am afraid I did not quite accomplish my aim, though we did increase our membership, our *Bulletin* subscriptions, and our *Hygeia* subscriptions, and two counties reported more meetings held this year.

Letters were written to Beaufort and Carteret County Medical Societies for permission to organize an auxiliary, but failed to get a reply. There is definitely some interest among the women in Carteret County. I feel that this county can eventually be organized if we keep trying. I have, by personal contact, tried to get this county organized. I was told by one of the doctors that they were planning to have "ladies night" soon.

In November a luncheon meeting of the Second District was held in Kinston, at Hotel Kinston, with thirty-eight attending. We had expected more, but it turned out to be a very rainy day. However, we had representatives from Craven, Pitt, Lenoir, and Carteret Counties. As guest speakers we were very fortunate in having both our president, Mrs. Berryhill, and our dear friend, Mrs. P. P. McCain. I feel sure that their presence and their messages did more to stimulate interest in Auxiliary work in the Second District than anything that could have been done.

I contacted all wives in the counties that had medical societies and invited them to pay their dues and become "members-at-large." \$9.00 was received in response to this. From the three counties already organized we received dues from seventy members, and from our newly organized auxiliary we received dues from nine. This makes a total of 88 members and "members-at-large" in the Second District. This is an increase of fifteen over last year. There are 123 eligible members (based on the membership of the medical societies).

I attended a meeting of the Pitt County Auxiliary in December. This auxiliary is on the road toward becoming one of our most active auxiliaries. I enjoyed my visit with this auxiliary very much.

Lenoir County Auxiliary has created a Student Nurse Loan Fund and has already raised a little more than \$250.00 toward this. Pitt County has a

committee for the recruitment of student nurses, with plans to contact high-school seniors in each town. They also plan a visitation day at the hospital for seniors interested in nurses' training.

All three auxiliaries observed Doctors' Day. Flowers were sent, dinners were held, editorials were written, and one county had a five-minute radio talk given by one of their members.

Members of the different auxiliaries report many hours spent helping with their local tuberculosis seal sale, Red Cross drive, cancer control, and infantile paralysis drives.

Our guests in the Sanatoria beds were remembered a number of times during the year by all three auxiliaries.

Pitt County has a representative working with the Greenville Recreation Commission.

\$25.50 has been reported sent in for the Cooper Bed Fund from this District, \$15.00 for the Endowment Fund, and \$10.00 for the Jane Todd Crawford Memorial Fund.

Respectfully submitted,
MRS. T. L. LEE

Report of the Third District Councilor

The Third District is composed of eight counties: New Hanover, Pender, Brunswick, Onslow, Columbus, Duplin, Bladen, and Sampson. Of these, New Hanover, Brunswick, and Pender combined to form the one organized auxiliary which has been very progressive during the year 1947-48.

In August a symposium was held by the New Hanover County Medical Society, and the auxiliary entertained the visiting doctors' wives at Wrightsville Beach.

It was decided at the March meeting to join the Health Division of the Community Council of New Hanover County, sending two delegates to each meeting.

We have tried to stimulate an interest in nursing among the high school girls, and entertained them at a tea for Miss North Carolina Student Nurse.

At the April meeting the auxiliary elected the new officers and ratified a set of by-laws calling for monthly meetings.

We contributed \$164.60 to the McCain Bed at the Sanatorium.

It has been a year of enthusiasm and advancement which we hope to maintain.

Respectfully submitted,
MRS. C. B. DAVIS, JR.

Report of the Fourth District Councilor

The Fourth District, composed of four units or five counties organized, has done outstanding work.

I attended all four meetings held in Wayne, spoke in Johnson County on the Blue Cross program, and attended a luncheon meeting in Wilson County, outlining the work for the year.

Hospital insurance in connection with the health program, and the nurses' recruiting campaign have been stressed, and all auxiliaries have had special programs on these subjects.

Respectfully submitted,
MRS. J. W. ROSE

Report of the Fifth District Councilor

As councilor of the Fifth District I beg leave to submit the following report:

Of the nine counties in my district, eight are organized, the three new ones being Moore, Lee, and Cumberland.

I have visited all the old auxiliaries except one, and served as guest speaker at these meetings.

A District meeting was held in May at the home

of Mrs. P. P. McCain in Southern Pines. Mrs. Reece Berryhill, State Auxiliary president, was the speaker for the afternoon.

All of the counties have contributed to the bed funds, and all celebrated Doctors' Day. The bed patients have been remembered by the auxiliaries at the holidays. The Robeson County Auxiliary under the presidency of Mrs. D. S. Currie, Sr., has been most active, having sponsored the cancer drive in Robeson County in addition to the auxiliary projects. One of their members has written a song about "The Life of a Doctor's Wife," which I think is to be sung during this meeting.

All the auxiliaries have sponsored "The Student Nurse Recruitment Program" by going into the county and city high schools and speaking to junior and senior girls about the advantages of a career in nursing. Miss Geraldine Maxwell, Miss Student Nurse of 1947, spoke to the girls in Hoke County, since she is an alumnus of that school.

The incoming councilor for the next three years is Mrs. H. S. Willis of McCain.

Respectfully submitted,
MRS. A. L. O'BRIANT

Report of the Sixth District Councilor

As Sixth District Councilor, I wish to submit the following report:

Mrs. O. C. Hansen-Pruss, president of the Durham-Orange Auxiliary, conducted two meetings and one board meeting. In October, the Auxiliary and the Nurses Association held a tea for "Miss North Carolina Student Nurse" at the home of Dr. and Mrs. R. G. Blackwelder. Seven new members were added to the group, making a total of 105 paid members and 15 honorary members from a total possible membership of 121.

At the September luncheon meeting of the Wake County Auxiliary Mrs. W. Reece Berryhill presented the plans and objectives of the Auxiliary, and each member received a year book. "Juvenile Delinquency" was the subject of the address by Mr. Blaine Madison at the November meeting. A Christmas party was held at the home of Dr. and Mrs. M. D. Hill. At the January meeting, Mrs. R. L. McMillan, chairman of Women's Activities in North Carolina for the National Foundation for Infantile Paralysis, spoke about her recent visit to Warm Springs, where she attended the regional meeting of the Foundation. In February, Dr. and Mrs. C. P. Eldridge entertained, at tea, the wives of new doctors. In March the auxiliary voted \$120 toward a scholarship for a nurse's training at Rex Hospital, and contributed \$83 to the Sanatoria Fund, \$5 to the Student Loan Fund, and \$10 each to the McCain, Cooper and Stevens Endowments. In April, delegates were elected to the state convention and officers were elected for the coming year.

The Wake County Auxiliary assisted in the Cancer, Red Cross and Infantile Paralysis Drives. Five members subscribed to *Hygeia* and two to the *Bulletin*. Three members died during the year.

Respectfully submitted,
MRS. W. T. WARD

Report of the Seventh District Councilor

As councilor of the Seventh District I wish to submit the following report:

I am very happy to report two active auxiliaries in the Seventh District—Mecklenburg and the newly organized Gaston.

The Gaston County Auxiliary held its first meeting in November, 1947, with Mrs. Raymond Thompson presenting the work of the Auxiliary. The District councilor attended this meeting. They organized formally in December, with seven officers and

eight committee chairmen to correspond to the state organization. They held Open House for the doctors on New Year's Day, and gave a buffet supper and had editorials in the local papers honoring them on Doctors' Day. They have had three other luncheon meetings with programs on cancer, the Medical Care Commission, and a talk by the wife of a medical missionary.

Their projects are:

1. Collecting samples of vitamins and drugs for shipment to doctors in China.

2. Serving as district captains of the county-wide rat eradication campaign.

3. Plans to organize a hospital auxiliary for the Negro Hospital and to assist in raising funds and in other activities to raise the standard of the Gaston County Negro Hospital.

4. Volunteering to serve as aides to the mobile blood plasma unit of the Red Cross.

5. Appointing a committee to work with the Junior Woman's Club toward establishing a Cancer Information Center in Gastonia.

With a paid membership of 38 already, their fine leadership, enthusiasm and cooperation, I ask you to watch them grow.

Mecklenburg has almost doubled its membership this year, with 134 paid members. The first meeting was a tea in October at the Mint Museum honoring the doctors' wives who have come to Charlotte since the war. We had our annual Christmas party for the doctors at the home of Dr. and Mrs. Raymond Thompson.

The monthly meetings have been held as luncheons with interesting speakers, following the program suggestions of the State Chairman.

The Auxiliary was hostess to the doctors' wives at the District meeting in Charlotte in November.

We gave \$105.00 to the beds and \$35.00 to the Student Loan Fund.

Respectfully submitted,
MRS. C. L. NANCE

Report of the Eighth District Councilor

The Eighth District has nine counties with four organized auxiliaries. These are Forsyth, Guilford, Rockingham, and a newly organized auxiliary in Wilkes-Alleghany.

Stokes, a county small in numbers, and very scattered, has no medical society of its own, but both the doctors and their wives meet with the Forsyth Medical Society and Auxiliary.

Surry and Yadkin have worked toward an organization but have had to give up the idea for the present because prospective members live over a scattered area. They do, however, have several members-at-large.

Randolph has disbanded. The doctors do not care to have the auxiliary meet with them, and very frankly they are not interested in an auxiliary at this time.

Guilford, with 102 members, is quite active. They meet four times a year, plan their own programs, and this year observed Doctors' Day with a dinner honoring their husbands.

Forsyth, with 81 members, meets four times a year, have their own programs, observed Doctors' Day with flowers in hospitals and offices. Their Christmas meeting was a lovely dinner with a program suited to the occasion.

Rockingham is fairly active, has 27 members and meets four times yearly in joint meeting with the doctors. Doctors' Day was observed by individuals with flowers in offices and hospitals.

Recommendation: Have county presidents contact their councilors.

This would be particularly helpful in making reports.

Respectfully submitted,
MRS. C. V. TYNER

Report of the Ninth District Councilor

As councilor of the Ninth District, I submit the following report:

The Ninth District of the Auxiliary to the Medical Society held their annual meeting at the Nurses Home of the Mooresville Hospital at the same time the Ninth District Medical Society met. For the program there were some state officers, including Mrs. Raymond Thompson of Charlotte, president-elect. Medical Auxiliary work was discussed in open-forum method, after which we adjourned and the Mooresville hostesses invited us for social hours in their homes. Later we joined our husbands for a joint dinner meeting at 6:30.

During the year Auxiliary work has been slow. Caldwell County leads the Ninth District with an active auxiliary, organized with meetings regularly and enjoying the fellowship. During the year we have remembered sick doctors, observed Doctors' Day, sent a Christmas cheer box to our Stevens Bed patient, collected Hygeia subscriptions, and sponsored a cancer drive. The Davidson Auxiliary is also active. Other auxiliaries of the Ninth District may have done likewise, but if so they have failed to send reports to their councilor, so I can not praise them.

However, I would recommend that doctors' wives get together. There is no end of pleasure in becoming better acquainted. Always I have been met with this reply, "We are over-organized." The Auxiliary to the Medical Society of the State of North Carolina is eager to establish a branch of its organization in every county. We wives of doctors believe that we can materially assist in the work of our husbands by banding together to be instructed in medical matters of the day in which the general public is interested, and then disseminate the correct information through the various social or civic groups with which we are affiliated.

Affiliation with the parent organization need not be burdensome. Dues as little as one dollar per member per year have met our obligations to date. Monthly meetings are suggested. Fewer may prove feasible. Let every doctor's wife resolve to do her part in helping to organize the doctors' wives in her county.

I trust my successor will be able to report that the Ninth District is doing its part, with 100 per cent county organization.

Respectfully submitted,
MRS. ALFRED A. KENT, JR.

Report of the Tenth District Councilor

As councilor for the Tenth District, I wish to submit the following report:

The Tenth District is composed of fourteen counties. Only three have organized auxiliaries. These are Buncombe and Yancey-Mitchell.

Letters were written to the presidents of the various county medical societies for permission to organize an auxiliary. Replies were received from three. Organization was completed in Yancey-Mitchell Counties. Mrs. James W. Berry, of Bakersville, was elected president in November, 1947.

The Buncombe County Auxiliary, under the capable leadership of Mrs. Julian A. Moore, has been very active. Several meetings have been held during the year. On December 11, 1947, a silver tea for the Stevens Bed Fund was given at the Western North Carolina Sanatorium. Mrs. G. M. Billings, of Morganton, chairman of the Stevens Bed, was guest

speaker, the honor guest being Mrs. Stevens. Doctors' Day was observed by a banquet at the Asheville Country Club. This auxiliary has raised \$1,200 for the Stevens Bed.

As councilor of the Tenth District, I have corresponded with Chairmen of Organization, Program, Stevens Bed, Hygeia and Doctors' Day Committees.

Respectfully submitted,
MRS. C. D. THOMAS

Report of the Councilor to the Southern Medical Auxiliary

The twenty-third annual meeting of the Woman's Auxiliary to the Southern Medical Association was held in Baltimore, November 25, 1947, at the Southern Hotel, with the president, Mrs. Wiley R. Buffington, presiding.

Mr. C. P. Lorz, treasurer of the Jane Todd Crawford Fund, gave a report showing a total as of November 15, 1947, of \$1,856.55, a loan having been made previous to this date to a physician for \$500.00. Mr. Lorz suggested that Kentucky be given back the \$1000.00 it contributed to the Jane Todd Crawford Memorial Fund, this to be used in the rehabilitation of the McDowell home at Danville, the place where Jane Todd Crawford was operated upon. The Kentucky State Medical Association is rehabilitating the McDowell home. It is to be a permanent shrine. The Auxiliary met for its annual luncheon at the Southern Hotel Ballroom. Dr. R. L. Sensenich, president-elect of American Medical Association, and Dr. E. L. Henderson, president of the Southern Medical Association, gave addresses on subjects vital to medicine, pointing out the serious problems facing the profession. The post-convention meeting of the Executive Board was held immediately following the conclusion of the general session. Mrs. Olin S. Cofer, president, of Atlanta, Georgia, stressed the importance of the Auxiliary program, asking that a chairman for "Research and Romance in Medicine" and one for "Doctors' Day" be appointed in each local auxiliary.

As your councilor I have sent in all reports to the Southern Medical Auxiliary as requested.

Respectfully submitted,
MRS. CLYDE R. HEDRICK

Report of the Chairman of the Jane Todd Crawford Memorial Fund

On February 21, 1942, Governor Johnson proclaimed December 13 as "Jane Todd Crawford Day." The route of her agony from Greensburg to Danville, Kentucky, is now known as the "Jane Todd Crawford Trail."

A monument erected in McDowell Park, Danville, to the brave soul of surgical history reads in part: "JANE TODD CRAWFORD—Mother of five children—settled south east of Greensburg, in Green County, November 1805—while suffering with a tumor that caused her great agony, on December 13th, 1809, her two physicians called in consultation Dr. Ephraim McDowell—He explained that her only hope was a surgical operation, frankly experimental, cautioning her that such an operation, not hitherto performed, might prove fatal. This heroine, though in great pain, rode 60 miles, horseback, over a rough trail to Danville, Ky., Dr. McDowell's home, where Christmas Day, 1809, with no Anaesthesia, she submitted to the first ovariectomy and thus became the pioneer patient in abdominal surgery . . ."

The tumor weighed 22½ pounds. Five days after the operation Dr. McDowell found Mrs. Crawford making her own bed. Twenty-five days after the operation Mrs. Crawford returned to her home. She lived a bit over thirty-two years afterward.

Craven County Medical Auxiliary donated \$10.00

in memory of Mrs. R. S. McGeachy for the Jane Todd Crawford Memorial Fund. Mrs. McGeachy was the chairman of this fund at her death.

A donation was taken when the Auxiliary met at Virginia Beach last May, which amounted to \$38.50. This was also given in memory of Mrs. R. S. McGeachy.

Total donation to Jane Todd Crawford Memorial Fund: \$48.50.

Respectfully submitted,
MRS. C. S. BARKER

Report of Program Chairman

The Program Committee submits the following report:

1. Program suggestions were sent out to all auxiliaries in the fall.
2. Blue Cross information was distributed.
3. Reviews of recent non-technical books of interest to doctors and their families were sent out in December. These were compiled by Mrs. N. B. Adams, Library Extension Department, University of North Carolina.
4. An article was written for the Auxiliary's page in the *Journal*.
5. Material to aid in nurse recruitment and lists of approved schools of nursing in this state and in the entire United States were furnished all auxiliaries.
6. Reports were sent to the regional chairman on time.

The chairman regrets that only sixteen societies returned their report blanks to her. Eleven reported a great deal of activity in nurse recruitment. Quite a few programs on the North Carolina Health Plan and Blue Cross Plans were reported, as well as some on general health, social and similar problems.

There was a great deal of participation in various drives for funds for cancer research, tuberculosis, and so forth. Robeson County receives particular mention because of their very thorough campaign for education regarding cancer. Their members also spoke to clubs and schools on other health topics.

There were numerous social meetings of the auxiliaries, as well as joint meetings with the doctors.

There was very little activity reported regarding programs on bills before Congress, which affect the medical profession.

Respectfully submitted,
MRS. HARRY L. JOHNSON

Report of the Scrapbook Chairman

The response to the request for clippings for our scrapbook has been gratifying. The eighteen entries attest the interesting and diversified activities of the past year under the capable leadership of our president, Mrs. Reece Berryhill.

It has been the privilege of your scrapbook chairman to receive and preserve these clippings for our records, and we invite you to look through them today.

Respectfully submitted,
MRS. R. A. MOORE

Report of the Chairman of the Committee on Press and Publicity

Each month of the 1947-1948 year an article has appeared in the *North Carolina Medical Journal* concerning the activities of the Auxiliary. The news items appearing during the year have been clipped and are available for reference.

Notice of the meeting at Pinehurst was sent to various newspapers in the state for publicity on Sunday, May 2, 1948.

MRS. C. C. CARPENTER

Report of the Bulletin Chairman

Thanks to the cooperation of the Bulletin chairmen in the county auxiliaries, I have obtained seventy subscriptions to the Bulletin this year—twenty-five more than last year.

MRS. WINGATE M. JOHNSON

Report of the Doctors' Day Chairman

Around March 1 letters were mailed to each councilor asking her to remind her district of Doctors' Day, March 30, and to give me a report. The following councilors were heard from.

Mrs. Lee—

Lenoir—steak supper and editorial in paper.

Craven—dinner party.

Pitt—dinner and five-minute talk on radio.

Mrs. Kent—All observed Doctors' Day.

Mrs. Nance—

Mecklenburg—editorial.

Gaston—dinner party.

Mrs. Thomas—

Buncombe—dinner party.

Johnston County—reported an editorial, a boutonniere, and a dinner party.

I feel sure there are others that I did not get a report from.

Respectfully submitted,

MRS. W. M. SUMMERVILLE

Report of the Hygeia Chairman

There have been 231 subscriptions to Hygeia sent in through the Hygeia chairmen this year. Two county auxiliaries, Johnston and Wayne, exceeded their quotas, Johnston County having a quota of 12 and sending in 16 subscriptions, and Wayne having a quota of 36 and sending in 52. Two unorganized counties, Burke and Carteret, sent in a substantial number of subscriptions.

Mrs. Ira Long of Goldsboro led the field with her sale of 52 subscriptions for Wayne County. Next came Forsyth with 49, and Guilford with 45. Fifteen counties responded.

The commission money from these subscriptions, amounting to \$123.75, has been sent to Mrs. Judd for the Bed Fund.

Respectfully submitted,

MRS. TAYLOR VERNON

Report of the Public Relations Chairman

The principal function of the Public Relations Committee during the past year has been active cooperation with the North Carolina Nurse Recruitment Campaign, during the speaking tour of Miss Geraldine Maxwell, "Miss North Carolina Student Nurse of 1947." Auxiliaries in eight of the larger cities of the state entertained her at informal teas. All girls in each locality who were interested in nursing as a career were invited to meet Miss Maxwell and other members of the profession. These teas contributed to the success of the tour, a part of the long-range recruitment campaign.

This spring, from May 10 through May 25, there will be another tour, by "Miss North Carolina Student Nurse of 1948," and auxiliaries in nine cities to be visited will likewise entertain at a tea. The report from the North Carolina Nurses Association is that enrollment in the nursing schools is improving.

A Public Relations article was written for the North Carolina Medical Journal.

Respectfully submitted,

MRS. MILTON S. CLARK

Report of the Research Committee**In Memoriam**

Dr. Paul Pressly McCain

(1884-1946)

Dr. Paul Pressly McCain was born in Due West, South Carolina, on June 26, 1884, a son of J. I. McCain, Ph.D., and Lula Todd McCain. In 1906, he received the A.B. degree from Erskine College, where his father was professor of English. Five years later, he received his M.D. degree from the University of Maryland School of Medicine. A year later, while serving his internship at Bay View Hospital in Baltimore, Dr. McCain became a victim of tuberculosis. It was while a patient at Gaylord Farm Sanatorium at Wallingford, Connecticut, that he found his true calling—the treatment and prevention of tuberculosis. After his dismissal as a patient, he became resident physician of the sanatorium.

On March 1, 1914, Dr. McCain became resident physician of the North Carolina Sanatorium, serving in that capacity for ten years. In 1924, he became superintendent and medical director of the North Carolina Sanatorium and director of the Extension Department of the Sanatorium. The remainder of his life was spent in the service of this great institution, which expanded under his guidance until it now comprises the Western unit at Black Mountain and the Eastern unit at Wilson, as well as the original unit. Under his administration as General Superintendent, the best and most modern in clinical management of tuberculosis prevailed in all three of these units.

In addition to his duties as physician and administrator, Dr. McCain worked in numberless ways as a leader in professional, civic, and religious life. He served as a member on various committees of the Medical Society of the State of North Carolina, and was elected its president in 1935. In 1940, he was made president of the National Tuberculosis Association. He acted as a trustee of Flora McDonald College, as Elder in the Presbyterian Church, and as a member of local civic clubs. He frequently wrote articles for various medical journals. The love that his patients had for Dr. McCain is testimony to his great love for those who needed him. His faith, courage, and cheerfulness helped his patients to forget their worries and to face life with courageous expectancy.

In 1917, Dr. McCain was married to Sadie Lou McBrayer, who has worked faithfully and effectively by the side of her eminent husband. Mrs. McCain was the real founder of the Auxiliary of the Medical Society of the State of North Carolina, now serving as its Chairman of Past Presidents. By the inspiration of her accomplishments, she still guides the members in this organization, just as Dr. McCain inspired and guided other members of his profession.

On November 25, 1946, Dr. McCain was killed in an automobile accident as he was on his way to attend a meeting of the North Carolina Medical Care Commission. In addition to his wife, Dr. McCain is survived by three daughters, Dr. Irene McCain of the University of Pennsylvania, Jane Todd McCain of Agnes Scott College, and Mrs. Hill McCollum of Leaksville; one son, John McCain of the University of North Carolina; one grandson, Hill McCollum, Jr.; and two brothers, Dr. James Ross McCain, president of Agnes Scott College, and Charles McCain of Birmingham, Alabama. One son, Lt. Paul P. McCain, Jr., was killed in action with the Army Air Forces over the English Channel in July, 1944.

In the death of Dr. McCain, the state of North Carolina has lost one of its greatest citizens; the

medical profession, one of its outstanding members; and humanity, one of its truest friends. Yet, in the lives of his family, in the hearts of his former patients, and in the progress of the cure and prevention of tuberculosis, Dr. Paul Pressly McCain lives on, eternally bringing hope, courage and healing to generations of suffering humanity.

MRS. J. A. ELLIOTT

Inaugural Remarks of the Incoming President

I accept this office with a deep sense of the high honor and confidence you have bestowed upon me, for which I thank you. I will do my best to be worthy of your trust.

The great responsibilities I am assuming, as your president, will be lightened by the knowledge that each and every one of you can be counted on to do your part, to help me keep this grand organization a forward-moving one.

During the past year as president-elect, I have tried to familiarize myself with the Auxiliary work.

I cannot say that the comprehension was always too clear, but I feel that perhaps I have started growing a little in this good and great work. At this time I would like to thank especially your capable president, Mrs. Reece Berryhill, and her Board members, for the enlightening help they have given me. I will possibly be calling on them again during the year for aid and advice. Since I have been given so much help, I would like to say that if at times I can be of assistance to a member of this organization I would consider it a privilege.

I once saw these words on the cornerstone of a school building: "Education is not a mere means to Life. Education is Life." It seems that these words would be good to be written on cornerstones other than a school building. Any organization with educated members is a live organization. So today I would like to say that education along medical lines is our task. I call on all members to be well informed and keep this a live organization.

MRS. RAYMOND THOMPSON

ROSTER OF MEMBERS

1947-1948

Mrs. Abbott, Robert.....Goldsboro
Mrs. Adair, W. E.....Erwin
Mrs. Adams, C. N.

Winston-Salem

Mrs. Adams, J. R.....Charlotte
Mrs. Ader, O. L.....Walkertown
Mrs. Adkins, Trogler.....Durham
Mrs. Albright, Sam.....Belmont
Mrs. Alexander, G. T.

Thomasville

Mrs. Alexander, James M.

Charlotte

Mrs. Allen, George C.....Lumberton
Mrs. Allen, J. W.....Black Mountain
Mrs. Alyea, E. P.....Durham
Mrs. Anders, McG.....Gastonia
Mrs. Anderson, E. C.....Wilmington
Mrs. Anderson, J. B.....Biltmore
Mrs. Anderson, W. Banks

Durham

Mrs. Anderson, Wade.....Wilson

Mrs. Andrew, J. M.....Lexington

Mrs. Andrew, L. A.

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Mrs. Armentrout, Charles

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Mrs. Austin, F. D., Jr.....Charlotte

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Mrs. Aycock, F. M.....Princeton

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Mrs. Baker, Lenox D.....Durham

Mrs. Baker, Tom.....Charlotte

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Mrs. Barbee, G. S.....Zebulon

Mrs. Barder, R. L.....Lenoir

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Mrs. Beavers, W. O.....Greensboro

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Mrs. Bell, Spencer.....Hamptonville

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Mrs. Bender, J. R.

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Elizabethtown

Mrs. Bennett, W. L.....Burnsville

Mrs. Benson, N. O.....Lumberton

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Goldsboro

Mrs. Benton, George R., Sr.

Fremont

Mrs. Benton, Wayne J.

Greensboro

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Bakersville

Mrs. Berryhill, W. Reece

Chapel Hill

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Mrs. Bigham, Roy S., Jr.

Charlotte

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Mrs. Bittinger, C. L.....Mooresville

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Mrs. Bizzell, Malcolm.....Goldsboro

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Lenoir

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Mrs. Bradford, Wallace B.

Charlotte

Mrs. Bradshaw, H. H.

Winston-Salem

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 Mrs. Brookshire, Harley, Sr. Asheville
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 Mrs. Brown, Ivan W., Jr. Durham
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 Mrs. Brown, Kermit. Asheville
 Mrs. Brown, L. G. Southport
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 Mrs. Fitzgerald, C. E. Farmville
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 Mrs. Foster, J. F. Sanford
 Mrs. Fowler, Shelton F. Lenoir
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 Mrs. Fox, P. G. Raleigh
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 Mrs. Freeman, P. L. Gastonia
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 Mrs. Frizzelle, M. T. Ayden
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 Mrs. Gibson, John Gibson
 Mrs. Gibson, L. O. Statesville
 Mrs. Gibson, M. R. Raleigh
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 Mrs. Grayson, C. S. High Point
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 Mrs. Griffin, Wm. Ray, Jr. Biltmore
 Mrs. Griffis, John Denton
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 Mrs. Grigg, W. W. Gastonia
 Mrs. Grimson, Keith Durham
 Mrs. Groves, R. B. Lowell
 Mrs. Gunter, June U. Durham
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 Mrs. Hackler, Robert C. Washington
 Mrs. Hackney, B. H. Lucama
 Mrs. Hadley, Herbert Greenville
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 Mrs. Hamer, Douglas, Jr. Lenoir
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 Mrs. Hamilton, J. H. Raleigh
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 Mrs. Hansen-Pruss, O. C. Durham
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 Mrs. Harden, Norman Greensboro
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 Mrs. Harrell, Henry Greensboro
 Mrs. Harrell, Jack Goldsboro
 Mrs. Harrell, William F. Charlotte
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 Mrs. Harris, I. E., Jr. Durham
 Mrs. Harris, Russell P. Leaksville
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 Mrs. Hart, O. J. Winston-Salem
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 Mrs. Harton, Roman A. Durham
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 Mrs. Hayes, James Fairmont
 Mrs. Haywood, H. B. Raleigh
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 Mrs. Hedrick, R. E. Winston-Salem
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 Mrs. Hedgpeth, Carey Lumberton
 Mrs. Hedgpeth, L. R. Lumberton
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 Mrs. Hester, W. S. Reidsville
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 Mrs. Holden, Howard T. Charlotte
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 Mrs. Holmes, George Winston-Salem
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 Mrs. Howard, J. C. Cherryville
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 Mrs. Hunter, Shelton Kenly
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 Mrs. James, F. P. Laurinburg
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 Mrs. Jennings, R. G. Thomasville
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 Mrs. Johnson, G. W. Wilmington
 Mrs. Johnson, H. L. Elkin
 Mrs. Johnson, H. W. Wilmington
 Mrs. Johnson, J. R. Dunn

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 Mrs. Johnston, Christopher Wilmington
 Mrs. Johnston, J. G. Charlotte
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 Mrs. Jones, C. M. Greenville
 Mrs. Jones, C. S. Shelby
 Mrs. Jones, D. H., Jr. Princeton
 Mrs. Jones, Ira Lenoir
 Mrs. Jones, O. Hunter Charlotte
 Mrs. Jones, R. J. Kinston
 Mrs. Jones, T. J. Durham
 Mrs. Jones, W. M. Gastonia
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 Mrs. Judd, E. C. Raleigh
 Mrs. Judd, G. B. Varina
 Mrs. Judd, J. M. Varina
 Mrs. Justa, S. H. Rocky Mount
 Mrs. Justice, Wm. S. Biltmore
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 Mrs. Kafer, O. A. New Bern
 Mrs. Kapp, C. H. Winston-Salem
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 Mrs. Keithan, John F. Asheville
 Mrs. Kelly, Luther Charlotte
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 Mrs. Kendrick, Chas. Lenoir
 Mrs. Kennedy, John P. Charlotte
 Mrs. Kennedy, Leon T. Charlotte
 Mrs. Kent, Alfred, Jr. Granite Falls
 Mrs. Kerns, T. C. Durham
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 Mrs. King, Edward Biltmore
 Mrs. King, Parks M. Charlotte
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 Mrs. Kleiman, David Raleigh
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 Mrs. Knox, John Lumberton
 Mrs. Kodack, Albert Asheville
 Mrs. Kornegay, R. D. Rocky Mount
 Mrs. Koseruba, George Wilmington
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 Mrs. Lanier, V. C. Welcome
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 Mrs. Laughren, W. Gus Burnsville
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 Mrs. LeBauer, S. F. Greensboro
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 Mrs. Lee, Leslie Kinston
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 Mrs. Lewis, R. E. North Wilkesboro
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 Mrs. Llewellyn, J. T. Williamston
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 Mrs. Lohr, Ralph Lenoir
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 Mrs. Long, Rowland V. Lexington
 Mrs. Long, V. M. Winston-Salem
 Mrs. Long, Zack Rockingham
 Mrs. Long, W. M. Mocksville
 Mrs. Lott, W. Clifton Biltmore
 Mrs. Lounsbury, J. B. Wilmington
 Mrs. Lovelace, Daniel Greensboro
 Mrs. Lovill, Robt. Mt. Airy
 Mrs. Lowery, J. R. Salisbury
 Mrs. Lubchenko, N. E. Harrisburg
 Mrs. Lucas, Paul Wilson
 Mrs. Lyda, E. W. Asheville
 Mrs. Lyday, C. E. Gastonia
 Mrs. Lyday, Russell O. Greensboro
 Mrs. Lyman, Richard S. Durham
 Mrs. Lyon, Brockton R. Greensboro
 Mrs. Macatee, George Asheville
 Mrs. MacBrayer, Reuben Southern Pines
 Mrs. MacDonald, J. Kingsley Charlotte
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 Mrs. MacMillan, E. A. Winston-Salem
 Mrs. Macon, G. H. Warrenton
 Mrs. MacRae, Donald Asheville
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 Mrs. Marr, M. W. Pinehurst
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 Mrs. Martin, William F. Charlotte
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 Mrs. Massingill, Paul Raleigh
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NEWS NOTES FROM THE OFFICE OF THE SURGEON GENERAL

3,035 Army Hospital Beds Set Aside for Veterans

A total of 3,035 beds in Army hospitals throughout the United States have been allocated for treatment of veterans, Major General Raymond W. Bliss, Surgeon General of the Army, has announced. The allocations were made at the request of the Veterans Administration.

Beds allotted for veterans may be used partly for treatment of chronic disabilities, with 325 set aside specifically for tuberculosis cases at Fitzsimons General Hospital in Denver. None of the beds allocated will be used for patients who could be treated in domiciles.

Applications Invited for Army Medical Resident Training Program

Applications for the Military Resident Training Program (in Army General Hospitals) are currently being received in the Office of the Surgeon General.

Under this training program any physician who qualifies for and accepts a commission in the Regular Army Medical Corps will be given the opportunity of competing for an approved residency in the field of his choice.

October 1, 1949, has been established as the deadline for receipt of applications from physicians who are interested in participating in this training program. Complete information and application blanks for the program may be obtained by writing to the Surgeon General, Department of the Army, Washington 25, D. C.

VETERANS ADMINISTRATION

Dr. Robert A. Kimbrough, Jr., prominent Philadelphia physician, has been appointed a member of the Veterans Administration national advisory board on medical problems. Dr. Kimbrough succeeds Dr. Paul Titus of Pittsburgh, who resigned recently.

* * * *

Dr. Alfred H. Lawton, dean of the School of Medicine at the University of North Dakota, Grand Forks, has been appointed chief of general medical research in Veterans Administration Department of Medicine and Surgery. Dr. Lawton assumed his new duties August 1 at VA Central Office in Washington, D. C.

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PANEL DISCUSSION ON PEPTIC ULCER

DR. JULIAN RUFFIN (Durham), Chairman: We have chosen a topic for discussion which is of interest to the medical man, surgeon, and general practitioner alike. All of them are confronted from time to time with the problems of ulcer.

The importance of peptic ulcer is due to the fact that it is so tremendously prevalent. It has been demonstrated that ulcer occurs in 10 per cent of the population of this country. With few exceptions, it is responsible for more loss of time from work than any other disease. Its complications are serious and not infrequently fatal. It becomes a matter of practical importance, therefore, that doctors be fully aware of the importance of this disease and be prepared to treat it properly.

We have divided the subject into four parts, which will be presented as follows:

Medical Aspects—Dr. Walter R. Johnson

Radiologic Aspects—Dr. Allan Tuggle

Surgical Aspects—

Dr. Howard H. Bradshaw

Psychiatric Aspects—Dr. M. H. Greenhill

* * * *

CLINICAL DIAGNOSIS

WALTER R. JOHNSON, M.D.

ASHEVILLE

Our chairman has suggested that this discussion be made as practical as possible for the man who does not have access to modern laboratory and x-ray facilities. For this reason I am going to confine my remarks to a consideration of the accomplishments possible by use of our five senses plus a Levin tube and a buret.

The function of the medical man, flanked on one side by the x-ray specialist who "makes the diagnosis" and on the other by

the surgeon who "cures" ulcer, might seem, at first blush, not very important. On the contrary, however, the role of the internist or general practitioner is of the utmost importance, because it is he who sees and cares for 85 to 90 per cent of these patients. It is he who tries to make the diagnosis, institutes treatment, and endeavors to keep his patients out of the hands of the surgeon. I think you will agree that, no matter how poorly his role is fulfilled, it is, indeed, a most important one.

Is it possible to make a diagnosis of peptic ulcer without the aid of x-ray study? I think it is, at least when the ulcer is of the simple, uncomplicated variety. I do not advocate it as a routine procedure; but when economic or other important considerations make x-ray examinations unavailable, I believe it is entirely justifiable to make a clinical diagnosis on the basis of the history and the results of an Ewald test meal, plus the response or absence of response to treatment.

Diagnosis of Uncomplicated Ulcer

The story of uncomplicated peptic ulcer is one of the most typical, stereotyped, and pathognomonic symptom complexes in medicine. I do not think any of us would hesitate to make a diagnosis of angina pectoris from the history alone. Why should we hesitate to do the same for the ulcer-bearing patient who consults us? Periodicity of epigastric discomfort is one of the important features of uncomplicated peptic ulcer. Daily discomfort for one to several weeks, followed by weeks or months of complete freedom from distress, is almost invariably experienced by these patients. During the period of discomfort the patient usually awakens from a sound night's sleep feeling entirely well. He has no discomfort, and he eats his breakfast with pleasure. This sense of well-being per-

sists for several hours (two to four or five) and then gives way to a vague epigastric distress, variously described as a "full, bloated feeling," an "empty, gnawing, hungry feeling," a "dull ache," a "sore, raw feeling," or a "burning discomfort." Many patients call it pain, but when asked to describe the sensation decide it is not pain but something akin to the above descriptive phrases.

Usually by the time the patient consults a doctor, he has learned that a glass of milk, a drink of water, a dose of soda, a tablet of Amphojel or Tums supplied by a kind friend, or some other material placed in the stomach will relieve his distress completely. He eats lunch with relish and continues to feel perfectly well until late in the afternoon, when the same unpleasant epigastric discomfort again makes its appearance. Again it is relieved by a bit of food or drink, or by the evening meal if the patient waits that long. If he goes to bed at an early hour, he will not be troubled again until 10 or 11 o'clock the following morning; but if he goes to a movie or sits up late or has a fuss with his wife or family, he may experience the distress before bedtime. Only rarely is he awakened from a sound sleep by epigastric distress; but if he is a light sleeper, he may experience discomfort one or more times during the night.

This cyclic pattern, recurring day after day for several weeks and then disappearing spontaneously, is almost pathognomonic of ulcer. It is true that almost identical symptoms are sometimes produced by a reflex from other intra-abdominal disease or are seen in association with achlorhydria, but in a vast majority of instances, when this symptom complex is described by an otherwise healthy young man, you can be fairly certain that he is harboring a simple ulcer. Beware of the person who says that he sleeps through the night and awakens at breakfast-time with an epigastric burning sensation. He usually does not have ulcer, or if he has, it has passed beyond the simple, uncomplicated stage.

To make the diagnosis a bit more certain, it is easy to obtain gastric contents thirty to sixty minutes after a meal of toast and water, and titrate the filtrate for free hydrochloric acid. If acid is absent, the symptoms are not due to ulcer. If a high degree of acid

is present, the diagnosis of ulcer is much more certain. Finally, if the patient responds immediately to a frequent feeding program, the probability of ulcer is still further enhanced.

I have said nothing about physical examination, because it is rarely of value except from a negative standpoint. A spot of epigastric tenderness is usually found, but that is all.

Of course, it is never wise to proceed without x-ray confirmation of your diagnosis if it is at all possible to obtain it. Early gastric cancer can produce symptoms identical with those I have detailed, and in patients of middle age this possibility must always be kept in mind.

Diagnosis of Complicated Ulcer

Unfortunately, not all ulcer patients will relate the typical diagnostic story, and it is easy to be led astray when concomitant nervous indigestion, other intra-abdominal disease, or lesions of the heart muddy the waters. Complications of ulcer, such as partial obstruction or slow perforation with attachment to adjacent viscera, often modify the story so as to render it unintelligible. In such instances, a simple little device is usually of extreme value. Ask the patient to give you an hour-by-hour account of his activities and symptoms from the moment he awakens until he goes to sleep at night. With a little help from his wife or family, he will then correlate his symptoms and relate them in ordered fashion. If the story is still too complex, ask him to go back five or ten years and describe a typical day's history. Often in this fashion you will uncover an old ulcer story that has been completely covered up by a host of new symptoms.

Summary

Any general practitioner, no matter how isolated, can, by means of a carefully taken history, plus a test meal, make a reasonably accurate presumptive diagnosis of peptic ulcer and institute proper treatment long before the patient's symptoms are sufficiently severe to warrant investigation by a gastroenterologic clinic. Proper treatment at this stage may obviate the complications so often encountered when peptic ulcer is neglected.

RADIOLOGIC DIAGNOSIS

ALLAN D. TUGGLE, M.D.

CHARLOTTE

In any discussion entered into by members of the various divisions of medicine, it is necessary to agree on nomenclature and anatomy. For that reason, I shall first describe the anatomy of the stomach as it is generally held by radiologists.

Anatomy of the Stomach

The *cardia* lies above the esophageal orifice.

The *body* or *pars media* is that portion between the *cardia* and the angle of the stomach, at which point the *pyloric antrum* begins and extends to the *pylorus* proper. It is probably better to call this portion of the stomach the *antrum*, rather than the *pyloric antrum*, because of the differences which arise when some people consider the *antrum* as the *pylorus*.

The stomach has its *greater* and *lesser curvatures*, and these curvatures, for descriptive purposes, are carried over into the first portion of the *duodenum*—the superior portion of the cap being its lesser curvature, and the inferior portion being its greater curvature. Much less attention is paid now than in former years to the position and type of the stomach—that is, whether the fishhook or the staghorn type. In the same individual the stomach may assume the fishhook shape in the upright position, and the staghorn shape in the supine or prone position.

Radiologic Examination of the Stomach

It was the physiologist, Cannon, who first filled the stomach with an opaque material and recorded its shadow on a sensitized plate. Since that time there has been a gradual and sometimes spectacular development in our knowledge concerning both the abnormal and the normal physiology of the digestive tract.

In the early years of radiology the organ to be studied was filled with an opaque substance, and indentations or outpocketings were then identified as additive or subtractive shadows either by fluoroscopy or on the film. Since the work of Berg, Forssell and others, the radiologic examination of the stomach now goes further and includes a study of the rugae—their size, shape, direc-

tion, and convergence or divergence. In this manner diagnoses have been made much more accurate.

Manipulation and pressure on the stomach following a small swallow of barium will show the rugae extending along the lesser curvature of the stomach. Along this lesser curvature, and in the mid-portion of the body, they are longitudinal and vary in size. The rugae on the greater curvature side are somewhat irregular, and in profile this irregularity produces a ragged appearance of the greater curvature. As the antrum is reached, the rugae become somewhat thinner; they may be in parallel formation, longitudinal to the antrum, or they may be obliquely placed. The rugae vary in appearance, depending on the distention of the stomach.

The cap or first portion of the duodenum, in which by far the greater number of ulcerations are found, is described as being roughly like a chocolate drop. It varies in size, shape, and position in different individuals, as does the stomach.

The mucosa of the cap is similar to that of the stomach in that the rugae are roughly longitudinal and parallel, whereas at the beginning of the second portion of the duodenum the mucosa assumes a lacework or lattice appearance.

Roentgenologic Manifestations of Ulcer Gastric ulcer

Ulcers manifest themselves by retention of barium in the crater. When the ulcer is viewed laterally, the barium seems to extend beyond the normal confines of the stomach. If the ulcer is seen *en face*, it shows a small blotch of barium which appears denser than the surrounding barium. The rugae may be seen to converge on the crater, and inflammatory reaction may produce a slight halo around the crater. This halo should be studied carefully, however, in order to rule out ulceration within tumor as its possible cause.

In gastric ulcer a spasm often occurs on the opposite wall of the stomach. This has been described as a finger pointing toward the ulcer. Gastric ulcers are generally found on the lesser curvature, in the body, and on the posterior wall.

Duodenal ulcer

Ulcers in the duodenal cap are also manifested by retention of barium in the crater.

Palpation with the protected thumb will dislodge barium from around the ulcer, but at all times the crater should retain its barium. Rotation of the patient will show the crater extending from one of the margins of the cap. Generally, but not always, there is an associated defect of the cap itself or even multiple defects. The crater is generally found at the convergence of the defects.

With either gastric or duodenal ulcer, there may or may not be an associated pylorospasm.

* * *

SURGICAL TREATMENT*

HOWARD H. BRADSHAW, M.D.

WINSTON-SALEM

The surgeon really has a very small part to play in the ulcer problem. Perhaps 10 per cent of the patients, after much debate and discussion, will finally be treated by the surgeon. No intelligent surgeon feels that surgery is the answer. It is not very gratifying to remove a large amount of normal stomach in order to treat a 3- or 4-cm. lesion which is not even in the stomach, but is outside it.

Recently there has been a revival of previously held theories concerning the cause or causes of ulcer and some proposed lines of attack. As in previous years, however, there is little concrete experimental or clinical evidence to lend support to much of the theorizing. Such ill defined and poorly understood matters as tissue resistance and psychic trauma are being much discussed in certain quarters. We are all aware in a vague way that such factors are probably important in many other disease processes, as well as in ulceration of the stomach or duodenum. In the present state of our ignorance, however, there seems to be little that can be done along such lines. Out of the various theories may come some really valuable research that will help to clarify this problem.

The aim of treatment should be to have a patient who has either healed his ulcer or has learned to live with it. This aim is not realized in a fair percentage of patients. It is then that surgery must be considered, and only then. When, despite good medical care, an ulcer prevents a man from earning a livelihood because of discomfort or is a threat to his life because of complications, then the

treatment should be changed. It seems foolish for internists and surgeons to argue heatedly about the virtues of their procedures. All too often they both fail. Certainly the numerous and frequent changes in both medical and surgical therapy attest to that fact.

In the whole problem of ulcer, acid has been a common denominator to which other fractions may be added or from which they may be subtracted. Even that common denominator is being questioned by some. It is, however, generally true that if patients can be kept in a state of achlorhydria or hypochlorhydria they will have little ulcer distress and will rarely develop subsequent ulcers if the original one has healed or been removed.

Gastro-Enterostomy

The idea of performing a gastro-enterostomy in order to allow the duodenal juice to dilute the gastric content and the acid to drain has not proved sound. A large percentage of patients have recurrence of symptoms, with acid values as high as before.

Vagotomy

I am sure you are all interested in the results of vagotomy. Dr. Ruffin can tell you more about that than I. We have operated on 12 patients. We started out doing vagotomy through the thorax, possibly because we were more interested in the thorax, and thought we got a better approach to more of the fibers. I think that idea is wrong; I believe that the approach from below is equally good, and it allows one to confirm the diagnosis, study the lesion, and perform some drainage operation. It has been found that it is difficult for these patients to empty their stomachs, and a supplementary procedure is often necessary at the time vagotomy is done. Probably the supra-diaphragmatic approach should be abandoned entirely.

The rate of regeneration of vagus fibers in the human being is not known. Following vagotomy the stomach regains a good deal of its power to contract and empty. This may or may not mean regeneration. Therefore, it seems that, particularly in younger people, the operation of vagotomy and subsequent gastro-enterostomy is subject to grave question. No one knows what the effects of partial denervation on the liver, pancreas, and intestines are.

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Partial Gastric Resection

It is my belief that partial gastric resection is the procedure of choice in the younger ulcer patient who has failed to respond to adequate nonsurgical therapy. I do not use the term "subtotal"; it is rarely subtotal. It accomplishes at least a partial vagotomy, removes the ulcer in most instances, and provides a large opening for gastric drainage and neutralization. The results reported from large clinics, plus our own experience with about 100 patients, will, I think, bear out the statement that it has been the most satisfactory procedure employed to date. In good clinics, the mortality following this operation is about 3 per cent in uncomplicated cases. Another 10 to 15 per cent of the patients will still have symptoms; an occasional one will develop rather marked anemia. Apparently, about 85 per cent of the patients having this operation can work and be self-supporting.

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PEPTIC ULCER AS A PSYCHOSOMATIC PROBLEM*

MAURICE H. GREENHILL, M.D.

DURHAM

When an organ such as the stomach or duodenum is so seriously diseased that the lesion leads to total incapacity, hemorrhage, perforation, or neoplastic growth, it is only natural that particular attention be paid to that diseased organ. Most of the articles in the literature dealing with peptic ulcer, as well as the major portion of the addresses which have preceded this one today, have been concerned with the pathology, disturbed physiology, and medical and surgical treatment of the stomach and duodenum. The psychiatric or psychosomatic approach to the problem of peptic ulcer is a portion of another point of view—namely, "to consider the stomach not as an isolated organ, but as a functioning unit in a whole integrated organism."

Effects of Neurologic and Emotional Disturbances on the Gastrointestinal Mucosa

When one considers that ulceration of the mucosa of the stomach or duodenum may occur in association with lesions of the

frontal lobes of the brain, with disturbance of the third ventricle, with destruction of nuclei of the posterior portions of the hypothalamus or of the tuber cinereum, in association with burns, and in connection with the terminal states of systemic disease, this conception of an organismic approach to the problem of peptic ulcer appears to be an obvious one. Less dramatic, but nevertheless striking, is the function of disturbed emotional states in peptic ulcer. In this conception one looks upon peptic ulcer as a manifestation of disturbed physiologic equilibrium resulting from emotional stress.

We all know that disturbing emotional states have an effect upon the stomach and duodenum. Beaumont, Richet, Carlson, and Cannon pointed out this fact long ago⁽¹⁾. Alvarez⁽²⁾ has intimated that emotional disturbances are not an unimportant factor in the etiology of peptic ulcer. The work of Wolf and Wolff and of Mittelman and Wolff has recently made clearer the correlation between physiologic dysfunction, in terms of hyperemia, hyperacidity and hypermotility, and disturbed emotional states in patients with gastric and duodenal ulcer⁽³⁾. They have shown more specifically that sustained anger, anxiety, and guilt are associated with hyperemia, hyperacidity and hypermotility of the gastric mucosa, leading to increased pain and hemorrhage. Furthermore, the pharmacologic action of vasodilator and vasoconstrictor drugs, atropine, epinephrine, acetyl-B-methylcholine, and neostigmine—all of which normally have an effect upon the gastrointestinal mucosa—is reduced in the presence of heightened emotional states. Giving further emphasis to the point of view that peptic ulcer is the reaction of one end organ to what might be considered a systemic disease or a dysfunction involving the whole organism is the fact that more than the gastrointestinal mucosa is involved when patients with peptic ulcer respond to emotional disturbances with hyper-

1. (a) Beaumont, W.: *Experiments and Observations on the Gastric Juice and the Physiology of Digestion*. Plattsburg, F. P. Allen, 1833. (b) Richet, C.: *Des Propriétés chimiques et physiologiques du Suc gastrique chez l'Homme et les Animaux*. Appendice A, J. de l'Anat. et de la Physiol. 14:170, 1878. (c) Carlson, A. J.: *Contributions to the Physiology of the Stomach*. *Am. J. Physiol.* 31:151, 1912. (d) Cannon, W. B.: *The Influence of Emotional States on the Functions of the Alimentary Canal*, *Am. J. M. Sc.* 137: 180-187 (April) 1909.
2. Alvarez, W. C.: *Nervousness, Indigestion and Pain*, New York, Paul B. Hoeber, 1943.
3. (a) Wolff, H. G. and Wolf, S. G.: *Human Gastric Function*, London and New York, Oxford University Press, 1943. (b) Mittelman, B. and Wolff, H. G.: *Emotions and Gastrointestinal Functions: Experimental Studies on Patients with Gastritis, Duodenitis, and Peptic Ulcer*, *Psychosom. Med.* 4:5-61 (Jan.) 1942.

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emia, hyperacidity and hypermotility. For example, not only is there evidence of such disturbed physiology in the stomach and duodenum, but changes in finger temperature, in capillaries of the fingernail beds and in respiration are evident. That is, when a patient complains of epigastric pain and tarry stools he is observing only the most distressing of a whole series of manifestations of disturbed homeostasis.

Characteristics of the Patient with Peptic Ulcer

Not all the causes of the disturbed homeostasis which leads to peptic ulcer are known. Those who have considered the problem of peptic ulcer from the viewpoint of comprehensive medicine—which considers pathology as the reaction to injury, including the response of tissues to all types of stress, both physical and emotional—have been impressed by the type of human being who develops peptic ulcer and by the circumstances under which he develops it. To peptic ulcer may be applied the adage, "It is not only a question of what kind of disease the patient has, but of what kind of patient the disease has."⁽⁴⁾

If one practices medicine from the comprehensive point of view, which takes into consideration not only the physiologic and pathologic stresses to which the human being is subject, but also the social and environmental strains, one cannot help but be impressed by the emotional characteristics of the patient with peptic ulcer. These characteristics have been outlined by investigators in internal medicine and in psychiatry during recent years. The results of their investigations might be summed up as follows:

1. The peptic ulcer patient shows manifestations of increased neuromuscular tension; this observation coincides with the conception of Alvarez and others that the individual with peptic ulcer is lean, drawn, and angular. Such individuals show signs of being taut and strained, and, if asked, admit to many symptoms of tension state.

2. The exacerbations of peptic ulcer which these patients have are clearly correlated with instances of emotional crisis. Events producing emotional strain, manifested by tension and depression, are common in the lives of such individuals, and lead to attacks of peptic ulcer.

3. If one takes the time to obtain a detailed life history of such patients, one finds a high incidence of psychoneurotic manifestations.

4. Individuals with peptic ulcer seem to be predisposed toward certain types of emotional strains, because of the characteristics of their personalities. Franz Alexander, Saul, and others have pointed out that these individuals are subject to emotional strain because they are constantly struggling within themselves to overcome being dependent upon another individual⁽⁵⁾. They are basically passive and dependent persons who fight valiantly to be completely independent, at the same time that they are tempted to lean upon someone else. At the moment that this campaign fails and they can neither be aggressively independent nor completely dependent upon another, they have so lost their feelings of emotional security that the physiologic equilibrium of the body becomes disturbed and physiologic changes result, which lead to peptic ulcer. Rosenbaum, Kapp and Romano have shown that an exacerbation of peptic ulcer, often with hemorrhage or perforation, resulted when a striving, tense, seemingly aggressive person was removed from another person upon whom he was dependent⁽⁶⁾.

5. Another characteristic of the individual with peptic ulcer is that in his chaotic struggle for independence he is strikingly aggressive, but has difficulty in expressing his aggressive feelings. These people tend to inhibit hostility. This inhibition of hostility appears to be associated with heightened physiologic responses such as hyperemia, hyperacidity, and hypermotility of the gastric and duodenal mucosa. Such a reaction follows closely the theories of positive inductance of Sherrington and Pavlov, who hold that the inhibition of a reaction is followed by a greater reaction than would otherwise have been obtained.

6. Since every human being is subject to emotional stress, why is it that some individuals develop peptic ulcer in association with such stress? For an individual to develop a peptic ulcer he must have three characteristics which might be called a psycho-

5. (a) Alexander, F.: The Influence of Psychologic Factors upon Gastro-Intestinal Disturbances, *Psychoanal. Quart.* 3:501-539 (Oct.) 1934. (b) Saul, L. J.: Psychiatric Treatment of Peptic Ulcer Patients, *Psychosom. Med.* 8:204-210 (May-June) 1946.

6. Kapp, F. T., Rosenbaum, M. and Romano, J.: Psychological Factors in Men with Peptic Ulcer, *Am. J. Psychiat.* 103: 700-704 (March) 1947.

4. Taylor, F. R.: Personal communication.

somatic triad. (1) He must have a constitutional predisposition to disturbance of the gastrointestinal system. One is struck by the high incidence of diseases of the gastrointestinal system in the family history of patients with peptic ulcer. (2) He must have a stomach or duodenum which is the principal reactor to a disturbance in the physiologic equilibrium of the body. (3) He must be particularly sensitive to a certain type of emotional strain—namely, an internal struggle between dependence and independence.

If these three factors are not present, an ulcer does not develop. The family history should uncover any constitutional predisposition. The finding of hyperacidity in the gastric analysis may give evidence of the predisposed organ, but obviously not in every instance. Mirsky indicates in a personal communication that a high uropepsin level in the urine is a good indication of a stomach disposed to ulcer formation⁽⁷⁾. The presence of personality traits which lead to peptic ulcer can be determined by a comprehensive medical history.

Applications to Therapy

This holistic point of view concerning peptic ulcer is backed by reports in the literature and by current work in internal medicine and psychiatry. This work would be mainly of theoretical value if it were not producing results in terms of therapy. Therapy based on the holistic viewpoint has been designed to re-establish the equilibrium of the person who has peptic ulcer, by producing greater emotional security within him. One can do nothing to eradicate the constitutional predisposition of such an individual. Most of the standard treatment of peptic ulcer—the Sippy diet, alkalies, belladonna, aluminum hydroxide, gastrojejunostomy, gastric resection, and vagotomy—has been designed to relieve the end organ.

It would seem to be good practice to treat the patient completely and wholly by utilizing, in addition to the methods just mentioned, some means of reducing the emotional tension which these patients often have. There are several methods which may help to achieve this aim: (1) Relief of the neuromuscular tension by teaching progressive muscular relaxation or by inducing relaxa-

tion with such drugs as the barbiturates. (2) Employment of the hospital setting or the doctor-patient relationship to give the patient a temporary feeling of dependence. (3) Removal of the patient from the emotional stress by bringing him into the hospital, or by planned efforts to get him away from the conflict. (4) Teaching the patient to avoid or control the emotional crisis which has again and again caused exacerbations of peptic ulcer, or verbally to ventilate hostility which he has bottled up.

One can only consider the stomach as a "functioning unit in a whole integrated organism." From this point of view, to quote Wolf and Wolff, "the objectives in the management of patients who exhibit the gastritis and ulcer syndrome are clear. Therapeutic efforts should be directed toward preventing or controlling gastric hyperfunction, and the problem resolves itself into one of the care of the man, rather than merely his stomach."^(3a)

Discussion

Chairman Ruffin: The first question we have is, "What are the indications for surgical therapy of hemorrhage in peptic ulcer?" Dr. Bradshaw.

Dr. Bradshaw: I wish I knew the answer to that. Hemorrhage is usually not very much of a threat to younger patients. The older patient who has repeated massive hemorrhages should have an operation. One cannot answer such a question categorically.

Chairman Ruffin: The next question is: "How can one differentiate between hemorrhage from peptic ulcer and hemorrhage from Meckel's diverticulum?" Dr. Johnson.

Dr. Johnson: Only rarely can this differentiation be made clinically. The appearance of the blood from Meckel's diverticulum may suggest that the bleeding point is located fairly low in the gastrointestinal tract, but for the most part we must depend entirely upon the previous history. An antecedent history of ulcer makes the probability of bleeding ulcer more logical, whereas the absence of previous epigastric distress causes one to suspect one of the less common causes of gastrointestinal bleeding. Attacks of pain or colic in the middle or lower part of the abdomen may accompany ulceration of Meckel's diverticulum, the atypical character of which might suggest this rare complication as the cause of melena.

Chairman Ruffin: Question 3 is: "If the wife is the cause of pain from a gastric ulcer, would you advise divorce?" Dr. Greenhill, I think that is down your alley.

Dr. Greenhill: I wish we could advise divorce sometimes, but it is supposed to be against the rules, because almost every time it happens the problem bounces back on us. It certainly is not a bad idea to bring the wife into the situation when one is treating a patient with peptic ulcer who obviously has psychoneurotic difficulties. I wish I had some figures on the incidence of diseases in the wives of men with peptic ulcer. I imagine it is high.

7. Mirsky, I. A.: Personal communication.

Chairman Ruffin: Dr. Tuggle, this is for you. "What is the effect of x-ray treatment in ulcer?"

Dr. Tuggle. Roentgen-ray treatment of peptic ulcer is based on the fact that such therapy will diminish the secretion of glands. I think it was Palmer, in Chicago, who popularized radiation therapy. I have had very little experience with it. I do not think it is going to be popular, because it takes a dosage of about 3,000 r, and you can not give this much radiation to a patient for a lesion which is likely to recur.

Chairman Ruffin: Dr. Palmer and Dr. Kirsner have reported a series of cases in which it was shown that the gastric acidity comes down following roentgen therapy; it is going to recur, however, and you do not dare to give x-ray treatment again. Therefore I would say that the x-ray has no real role in the treatment of peptic ulcer.

The next question reads as follows: "Discuss the value, if any, of amino acids, as a supplement to the therapy of ulcer." Dr. Johnson.

Dr. Johnson: I believe there is general agreement that the protein hydrolysate therapy of ulcer has no specific merit, except in those patients suffering from malnutrition and hypoproteinemia. The buffering action of milk and non-soluble antacids is usually adequate, and there is little reason to force an unpalatable mixture of protein hydrolysate on the ulcer patient unless he shows definite evidence of protein starvation.

Chairman Ruffin: Next, "What percentage of patients, following subtotal gastrectomy, have a macrocytic anemia?" Do you know the percentage, Dr. Bradshaw?

Dr. Bradshaw: I do not know the exact percentage, but I think it is very small—not over 2 or 3 per cent.

Chairman Ruffin: Dr. Johnson, will you answer this: "Can you cure by medicinal treatment and diet a duodenal ulcer and allow the patient to take one good highball before dinner?"

Dr. Johnson: The answer, I think, must be yes and no. It all depends on the make-up of the ulcer-bearing patient and on the type and severity of his ulcer. Many ulcer patients get to the point where they can take a highball or two before dinner without apparent harm. If you have sold the patient on the necessity for constant and careful attention to his stomach in the form of frequent bland feedings with between-feeding antacids, together with regular hours, avoidance of tobacco and so forth, he will eventually heal his ulcer if it is uncomplicated. After his ulcer is healed, an occasional highball will do him no harm if the remainder of the ulcer program is adhered to.

Chairman Ruffin: Here are two questions for Dr. Bradshaw: (1) "Discuss vagotomy in relation to the treatment of gastric ulcer, with special reference to motility complications following vagotomy." (2) "What are the clearest indications for vagotomy?"

Dr. Bradshaw: I think the clearest indication for vagotomy is recurrence of ulcer symptoms—especially pain—after surgery. The motility, of course, is interfered with; the stomach does not empty, under normal circumstances, very well. Nevertheless, vagotomy is justifiable in such cases, and the ulcer pain is immediately relieved.

Chairman Ruffin: Vagotomy is still in the experimental stage. When a patient is not relieved by partial gastric resection, additional surgery is sometimes necessary. However, I should advise against vagotomy unless you are prepared to follow your

patient closely by x-ray to determine what degree of retention exists, or unless you are dealing with a patient in whom the pre-existing stoma is still present.

I hope in less than a year to give you more definite information on this. A nation-wide survey is being made as to the results of vagotomy. Some 5000 cases have been treated by this method.

I have been asked to discuss the cause of pain in peptic ulcer. Since the pain is relieved immediately by cutting the vagus nerve, one might think that the vagus is the central pathway for the transmission of pain. However, the vagus nerve can be stimulated below the diaphragm by every means you can think of, without producing any sensation whatever. Furthermore, we have shown that spinal anesthesia causes the pain of ulcer to disappear. Since the vagus comes off the brain stem, this result could not have been produced by paralysis of the vagus. Some say the pain is due to acid bathing the base of the ulcer. Some say it is due to spasm. I do not believe we have the final answer yet.

The next question is for Dr. Greenhill: "What are the results of psychotherapy in the treatment of ulcer?"

Dr. Greenhill: There are no statistics available as to the results of psychotherapy in peptic ulcer, and I can only draw from my own personal experience. In a patient who has had peptic ulcer for several years, with repeated exacerbations, or who has had perforation or hemorrhage, the results are not very good. In the large group of patients who come in complaining of symptoms such as Dr. Johnson has described, I think some improvement in terms of less frequent and less intense exacerbations can be accomplished. That is about as much as we can say.

Chairman Ruffin: Here is a surgical question: "What percentage of patients with achlorhydria later develop carcinoma?"

Dr. Bradshaw: I do not think those figures are available, but a recent survey of patients with cancer of the stomach showed that there were more in the group with a history of low gastric acidity than with a history of relatively high acidity.

Chairman Ruffin: "Should all patients with gastric ulcer be subjected to resection?"

Dr. Bradshaw: Generally, yes. However, if the patient is elderly and is in rather poor physical condition, with an ulcer near the esophagus, that patient might well be treated conservatively and observed periodically. Of course, while observations are being made we may lose our best chance of curing a cancer. On the other hand, the operation carries considerable mortality. Nearly all patients with gastric defects who have been thought to have ulcer should have surgery, because it has been shown in many large clinics that about 22 to 25 per cent of those patients really have cancer. It is impossible to be certain before operation whether a patient has ulcer or cancer. If one decides to try a period of conservative treatment, it should not be measured in terms of months, but in terms of weeks.

Dr. Tuggle: A recent article in the *Journal of the American Medical Association* gave the percentage of error in the radiologic diagnosis of ulcerations of the stomach as 20 per cent. That is high, but most of the errors occur in the borderline lesions; other lesions can be diagnosed with a fair degree of accuracy as carcinoma or ulcer. Lesions of the antrum are particularly difficult to diagnose. Even at operation such a lesion may appear benign, and only after the pathologist gives his report can one be certain that it is malignant.

Chairman Ruffin: "Can peptic ulcer be treated

adequately by the general practitioner? If so, what do you consider the most effective method of treatment?" Dr. Johnson, will you answer that?

Dr. Johnson: As has been said before, we general practitioners are called upon to treat 85 to 90 per cent of all patients with ulcer. If we do our job effectively, our patients will be spared a tremendous amount of suffering, and a lesser number of them will eventually require surgery. The doctor himself must be convinced that adequate treatment means several years of constant care instead of the temporary and incomplete programs so often prescribed.

First of all, since it is rarely possible to persuade the patient with uncomplicated ulcer that he needs hospital care, we are forced to treat him on the hoof, whether we like it or not. I believe that a satisfactory result can be obtained from ambulatory treatment in the vast majority of instances, and I am going to confine my remarks to that form of therapy.

Of what does an adequate program consist? Three small meals of simple, bland foods, with hourly between-meal feedings of milk or the equivalent, are the mainstay of our program. The feedings should begin as soon as the patient arises in the morning and should continue until he goes to sleep at night. If nocturnal distress occurs, additional feedings should be taken. In addition, the use of belladonna plus phenobarbital (Belbarb, Donnatal or Barbidonna tablets) three or four times daily is usually helpful. If pain is severe and gastric acidity high, a non-soluble antacid, such as Creamalin, Amphojel, or Gelusil, is indicated. I prefer to use the tablet form because it is so much simpler to carry tablets than to carry a huge, messy bottle of liquid preparation. The tablets can be popped into the mouth, chewed, and swallowed midway between all feedings, whether the patient is hoeing corn, driving a truck, pounding a typewriter, shopping, or what not.

Adequate treatment also means abstinence from tobacco and alcohol, and this is where we so frequently encounter our greatest difficulty. I have seen patients who faithfully followed an hourly feeding schedule with antacids and nerve sedatives, but continued to smoke and to have night pain of such degree that life was not worth while. When finally persuaded that they must either give up cigarettes or three fourths of their stomachs, they stopped smoking and almost immediately obtained complete relief from ulcer pain. Such dramatic results could scarcely be mere coincidence, so I am a stickler for elimination of tobacco from the ulcer regimen. The same statement applies to coffee and other caffeine-containing drinks. Tobacco, alcohol, and caffeine have all been shown to be potent stimulants of gastric acid secretion, and such stimulation is exactly what our ulcer program is designed to prevent.

Almost all patients will achieve complete freedom from peptic ulcer symptoms, even while at work, if they follow a regimen such as I have outlined for a week or two. The frequency of feedings can be lessened as healing progresses, and eventually, after four to six weeks of satisfactory progress, a daily program of six feedings can be adopted. If the six-feeding schedule is followed faithfully for a year or two, the patient is well on his way to successful and perhaps permanent control of his ulcer.

Chairman Ruffin: What about the psychosomatic effects of smoking?

Dr. Greenhill: If patients smoke so much that the doctor can not get them to stop, they smoke because they are tense. In order to get them to stop

smoking one might have to substitute some other outlet for the tension.

Chairman Ruffin: That concludes the panel discussion, and we thank you for your interest.

CORRECTION OF THE NASAL PROFILE LINE

KENNETH L. PICKRELL, M.D.

and

JAMES W. KELLEY, M.D.

DURHAM

Psychologic Effects of Facial Disfigurements

The person with an unsightly nasal abnormality may be seriously handicapped in the business and social world, and as a direct consequence may develop somatic and psychic disturbances. In many instances, these visible and conspicuous nonconformities are more harassing than congenital or acquired defects in other parts of the body. Many individuals readily compensate for physical or physiologic impairments, but there is no mechanism that will shield an individual with a facial disfigurement from the continued attack upon his self-esteem. The person who is unhappy because of an unsightly nose or protruding ears will have his inner security assailed each time he looks into a mirror.

To many physicians the nose is a rather uninteresting part of the body, unless there is some nasal obstruction or impairment of breathing. To the individual, however, an external deformity of the nose—whether congenital or the result of injury or disease—may be the primary object of concern, even though no obstruction exists. Such unfortunates, children or adults, should be given an opportunity to have this handicap removed. They should not be encouraged to endure the misery and abuse to which they are subjected, for no one knows the indelible mental effects thus produced.

The need for reconstructive plastic surgery to correct the condition, and to diminish the handicap and the possible psychologic sequelae is evident. It should not be inferred, however, that every individual with a nasal abnormality should be operated upon; for there is no direct relationship between the

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size or severity of the physical defect and the reaction to it. Individuals with only slight or seemingly minor facial abnormalities frequently suffer more mental distress than those whose defects are pronounced⁽¹⁾. This mental distress, which stems not from the physical factors but from psychologic ones, is as real as actual physical pain and demands tolerant and understanding consideration.

The plastic surgeon must distinguish between the patient whose anxiety is based upon factors other than the presenting complaint, and the patient suffering from a situational reaction. If a surgeon, consulted by a patient whose psychologic state may be a reflection of the deformity, is uncertain as to the nature of the reaction or anxiety, he should have no more hesitation in requesting an interview with a psychiatrist than in asking for a medical or urologic consultation, or a roentgen examination. The psychiatrist will be able to help differentiate those patients whose reaction is related to the disfigurement, and in whom a repair or improvement of the abnormality will be helpful, from those with a psychiatric condition who will only find another symptom for the expression of emotional difficulties if the deformity is repaired. The psychologic result of the operation will be entirely different in these two types of patients. In one instance, a helpful service will have been rendered; in the other, a great wrong may have been committed.

As a general rule, the more pronounced the deformity or loss, the more likely is a reasonably good result from a plastic operation to be acceptable to the patient. Conversely, it is well to be cautious about embarking upon the correction of slight defects⁽²⁾. A patient's inability to state accurately and succinctly the particular thing that displeases him should cause the surgeon to have grave doubts concerning his ability to satisfy, and should excite suspicion that the accused nose might not be the real difficulty. There is a class of patients who have a nasal complex not relieved by operation, however successful, and operations on such patients are to be avoided. The differential diagnosis between the genuine and the false is, at least in some instances, one of considerable diffi-

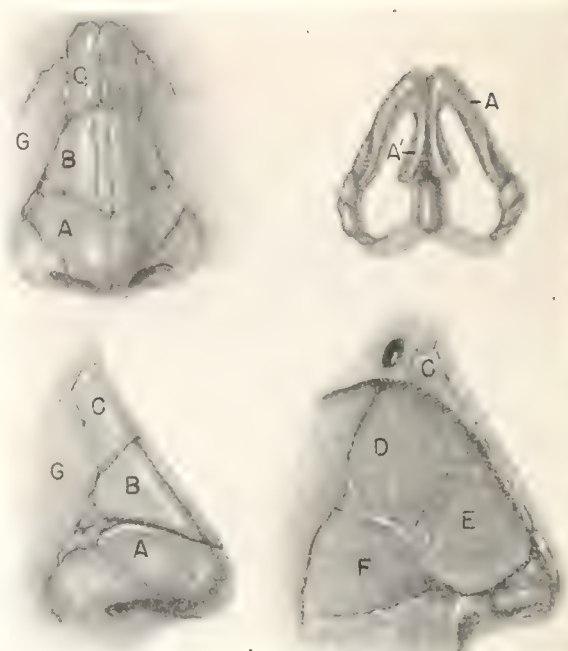


Fig. 1. Bone and cartilaginous framework of the nose. The lower part of the nasal framework is cartilaginous; the upper part consists of bone. The nasal bony arch consists not only of the nasal bones (C), but also of the nasal process of the superior maxilla (G). The lower lateral cartilage, the alar cartilage, is horseshoe-shaped, consisting of a lateral crus (A), which aids in the formation of the ala, and a medial crus (A') which, with the medial crus of the opposite side, supplies the structural support for the columella. The cartilaginous septum (E) forms the greater part of the median partition. Anteriorly the septal cartilage becomes continuous with the upper lateral cartilage (B), the triangular cartilage, which diverges from it in a winglike manner. The osseous septum comprises the perpendicular plate of the ethmoid (D), the vomer (F), and the frontal spine of the nasal bone.

culty. The help of a psychiatrist is of great value when there is any doubt.

Etiology of Nasal Deformities

An appreciation of the etiologic factors underlying nasal deformities is essential, since failure to recognize them may nullify the expected good result of an operation which has been performed expertly.

Heredity

Many hypotheses have been advanced to explain the cause of nontraumatic nasal disfigurements. Some investigators believe them to have a phylogenetic origin. The fact that nasal deformities are practically unknown among animals and savages⁽³⁾, and

1. Gillies, H. D.: The Development and Scope of Plastic Surgery, Bull. Northwestern Univ. M. School 35:1, 1935.

2. Blair, V. P., and Brown, J. B.: Nasal Abnormalities, Fancied and Real, Surg., Gynec. & Obst. 53:797-819 (Dec.) 1931.

3. Fomon, S.: Surgery of Injury and Plastic Repair, Baltimore, Williams and Wilkins Company, 1939.

are rarely found in semicivilized races, lends support to the assumption. The protagonists of this theory believe that the forward cranial extension incident to the growth of the brain in its development from the anthropoid to the human form has encroached upon the nasal bones and resulted in a lack of balance between the facial and cranial parts of the skull.

The nasal pyramid (fig. 1), wedged between the unyielding frontal, maxillary, and ethmoid bones, is in a fixed position. If the hypothesis just discussed is true, any change in the cephalocaudal diameter will lead to buckling and deviation of one or more of the nasal elements. An unbalanced development of the adjoining facial bones may also affect the symmetry of the nasal pyramid. Maldevelopment of one component part

of the nasal pyramid may influence the growth of the remaining nasal elements (fig. 2 and 3). A preponderance in strength of one bone over another may cause dislocation or bending of the weaker.

An overdeveloped vomer may crowd against the descending perpendicular plate of the ethmoid, causing distortion of the septum and dislodgment and asymmetry of the nasal structures which are dependent upon it for support. The normal high-arched palate of childhood may fail to descend, because of underdevelopment of the maxillary bones. This high arch leaves less room in the vertical diameter for the growth of the vomer below and the perpendicular plate of the ethmoid above; in the process of expansion these bones must then encroach upon the septal cartilage between, thus affecting



Fig. 2. The artistic creative power is the important factor in the success of the rhinoplastic operation, which may change the patient's entire facial appearance and expression. A long pointed nose with a small hump produces a deformity which in some individuals may produce indelible effects.



Fig. 3. A large nose situated on a relatively small face. The entire profile line was altered by corrective rhinoplasty in a single operation. While the glabellar angle was essentially normal, the elevated profile level was due to the anterior flare of the upper lateral cartilages, which, together with the high nasal septum, produced a nose out of all proportion to the size of the patient's face. In addition to altering the nasal bridge, the nostrils were shortened and the upper lip lengthened.

the structure and contour of the entire nose. Conversely, a hard palate which is too low may bring about a deformity by causing a downward dislocation of the nasal structures.

The facial features of the progeny of mixed races are unfortunately not a fusion but a conglomeration of the composing elements, wherein the genes which carry the disfigurement struggle for supremacy. For example, a large nose inherited from one parent may be crowded into a small face inherited from the other (fig. 3).

Trauma

Because of its prominence on the face, the nose is subject to violence in all periods of life. In the prenatal state, deformations are said to be caused by the pressure of amniotic bands, adhesions, excessive contraction of the uterus, or trauma applied to the abdomen of the mother. During the course of prolonged labor considerable pressure may be exerted on the nose, and despite the elastic and pliable consistency of the nasal structures, permanent nasal injury may result. When forceps are employed in the delivery of an unrotated head high in the pelvic inlet, the tip of one blade is likely to press against the base of the nose, thereby deforming it.

Growing children are especially liable to nasal trauma. Unfortunately, such an injury received in childhood, producing at the time

no visible deformity and therefore regarded as of little importance, may cause serious interference with the future development of the nasal framework. In adults also, fractures and dislocations of the nasal bones and cartilages may not be manifest until some time after the injury.

Inflammation

In *syphilitic involvement* of the nose, all of the elements may be destroyed and replaced by unyielding scar tissue. The disfigurement is quite characteristic: because of the lack of supporting structures, the bridge falls, and a saddle nose results. The loss of mucous membrane and the subsequent contraction of scar tissue cause the tip and alae to retract so that the plane of the nostrils assumes an upward position. The skin is pale and glossy, and as time progresses it may be destroyed, leaving only a hole to mark the place where the nose was located originally.

Lupus usually begins in the cartilaginous septum at the junction of the skin and the mucous membrane; from here it spreads to the external surface. Here the contraction of the scar tissue results in a downward bending of the tip and a narrowing of the anterior nares. The bones are usually not involved.

Other inflammatory diseases causing nasal disfigurements by distortion and contraction are actinomycosis and rhinoscleroma. These processes begin as a hyperemia; but since the bone is not capable of swelling, the tension in the haversian system rises, and the exudate is forced between the periosteum and the bone. The pressure of the fluid eventually strangulates the blood supply, and there results an absorption of the nasal elements with consequent disfigurement.

Neoplasms

Neoplasms may cause deformity either by the exertion of intranasal pressure or by their external position (fig. 4).

Anatomic Aspects of Nasal Deformities

Bone-cartilage framework

The two nasal bones articulate with each other in tent fashion anteriorly to form the bridge of the nose, and with the nasal process of the maxilla laterally. Above, they are narrow and strong and supported by the bony septum. Below, they become thinner



Fig. 4. Total reconstruction following amputation of the nose for carcinoma. The flap was elevated from the forehead and the unused portion was replaced.

and wider, and this relative weakness, as well as their exposed position, accounts for the prevalence of fractures in this location (fig. 1).

The *septal cartilage* gives structural support and contour to the lower half of the bridge of the nose and forms the greater part of the median partition. Anteriorly it becomes continuous with the upper lateral cartilages. The septal cartilage is involved in almost every nasal disfigurement. Being a flexible body, it yields easily to pressure and may be dislocated from any or all of its attachments. If it is dislodged or bent, or if for any reason it fails to exercise its function of support, the surrounding structures then also become displaced. During the period of development the septal cartilage, through vertical upward pressure by the vomer below it, raises the dorsum of the nose. This fact explains the failure of the forward extension of the nose when disease or injury to the vomer occurs before puberty.

Spurs on the septum may have to be removed prior to rhinoplasty, since the narrowed nasal arch may impinge upon them and cause obstruction (fig. 5). Associated with a long nose is an overhanging septum, and for its correction a wedge of the septum and mucous membrane is removed (fig. 5). Should this deformity be associated with a protruding upper lip, both can readily be corrected by removing the nasal spine and readjusting the nasolabial angle after the method of Aufrecht⁽⁴⁾.



Fig. 5. Deviation of the anterior septum may cause nasal obstruction in addition to the external deformity of the nose. The hump nose with an associated overhanging columella and septum was corrected by first removing the overdeveloped nasal bones and cartilages, to lower the nasal bridge line. Removal of a wedge from the anterior border of the septum, together with the redundant mucous membrane, then elevated the tip and reduced the entire size of the nasal pyramid.

4. Aufrecht, G.: A Few Hints and Surgical Details in Rhinoplasty, *Laryngoscope*, 53:317-335 (May) 1943.



Fig. 6. Submucous operations in which the septum is extensively resected, the thickened vomer removed, or the anterior nasal spine sacrificed may cause the nasal bridge line to become concave, producing a "false hump." With the consequent lowering of the tip of the nose, the columella may retract. The deformity may be corrected by insertion of an L-shaped piece of sculptured cartilage, fresh or preserved.

The anterior extremity of the vomer abuts on the incisive crest of the maxillae and is of much surgical importance. It is here that the lower segment of the septal cartilage, which supports the tip of the nose, is inserted (fig. 1). Submucous operations in which the thickened vomer is widely resected, and especially when the adjacent nasal spine has been sacrificed, are likely to result in sinking of the dorsum and a consequent lowering of the tip of the nose (fig. 6).

The *upper lateral cartilages*—the triangular cartilages—are two flat plates situated immediately below the free border of the nasal bones, spreading downward and outward from the septum with which they are directly continuous. They form the approximate middle third of the nose and are extremely important elements in the maintenance of normal contour in this location. These upper lateral cartilages form the body of the nose and, with a hump, flare anteriorly (fig. 3). With a broad bridge they are usually widened and flat; with saddling or a depressed bridge, they are sunken and deviated. When associated with an old harelip, they may be flattened and depressed on the affected side.

The *lower lateral cartilages*—the alar cartilages—encircle the nostrils and assist in maintaining their patency. Each cartilage consists of a medial and a lateral crus (fig. 1). The two medial crura approximate each other in the median plane. Together with their investing soft tissues, they form the



Fig. 7. A long nose with a bulbous tip corrected in a single sitting.

lower part of the nasal septum, which, owing to its free mobility, is referred to as the *movable septum*. Above, the medial crura are united to the septal cartilage; posteriorly, they end in free out-turned borders; anteriorly, they bend to form angles with the lateral crura. The approximation of the two angles then forms the tip of the nose. Sheehan⁽⁵⁾ has stated that, of all the elements of the nasal framework, the one requiring the most delicate handling is the lateral extension of the alar cartilages (fig. 7). The configuration of the nostrils is directly dependent upon the size, position, and contour of these cartilages.

Columella

The character of the columella, be it long, short, narrow, or wide, will affect the shape of the nostrils. Often an oblique columella will be straight when more of the lower lateral cartilage is removed from either one side or the other. A retracted columella may be corrected in some instances by elevation of the tip of the nose (fig. 8). Other cases require the introduction of a supporting strut through a small separate incision. A hanging columella (fig. 7) may be corrected by removal of a portion of skin from both sides, or by utilization of the Aufrecht procedure⁽⁵⁾ to correct the nasolabial angle. Occasionally surgery is required on the columella itself. A Z flap may be inserted at the base or tip to correct an abnormally oblique one, or a V or Y incision may be made at the base or tip for one especially short.

Arteries and veins

The arterial supply to the nose is derived from the internal and external maxillary

5. Sheehan, J. E.: *Plastic Surgery of the Nose*, ed. 2, New York, Paul B. Hoeber, Inc., 1936.



Fig. 8. A hook nose, producing a retracted columella and a short upper lip. By reconstruction of the nasal pyramid, many of the facial angles were changed. The upper lip was lengthened at the same time to produce symmetry of the lips and balance with the chin.



Fig. 9. Webbing of the upper lip, associated with a slight hump, causes an optical illusion simulating a receding chin. The nasolabial angle was corrected by removing a small segment from the anterior border of the septum and the anterior nasal spine, and then adjusting the lip to harmonize with the facial contour.

(branches of the external carotid) and from the ophthalmic, a branch of the internal carotid. These arteries terminate in capillary plexuses which supply the nasal mucosa, glands, and skin. The veins form a close cavernous network immediately beneath the mucous membrane. They anastomose freely and terminate in the anterior facial and ophthalmic veins.

Nerves

The sensory nerve supply of the external nose is derived from: (1) the infratrochlear, supplying the skin of the root, (2) the nasociliary branches of the ophthalmic, supplying the alae and tip, and (3) the infraorbital branch of the superior maxillary, supplying the sides. The only motor nerve to the nose is a branch of the facial which is distributed to the alar muscles.

Muscles

The muscles of the nose are vestigial. Immobilization following reduction of nasal fractures thus offers little difficulty, because there is no muscular pull that would tend to displace the fragments. The principal muscles of the external nose are the compressors and dilators of the nostrils and the depressors and elevators of the alae nasi.

Preoperative Analysis of the Deformity and the Plan of Reconstruction

Before attempting the correction of any nasal deformity, it is imperative to have a clear mental picture of the final result to be achieved. The proper form and dimensions of the nose to be reconstructed can be estimated only by a comparison of the deformed

organ with some standard. The creation of a single norm applicable to all faces is impossible, since the correct proportions of a given nose will, for the most part, depend upon the character of the structures which immediately surround it. Furthermore, a norm such as this would not be desirable, since criteria of the ideal shape are by no means universally accepted. Although no fixed standard can be determined, one may establish an esthetic norm for each individual face, to serve as a basis for the calculation of the deformity. Considerable judgment will be necessary in evaluating each person and face, for in some individuals variations from fixed measurements and proportions, even though outside of our arbitrary normal limits, do not justify correction.

In discussing the question of a norm, McCoy⁽⁶⁾ has asked, "What standard shall influence us in determining the difference between the anomalous relationships and those to be established?" Many dissimilarities are found among individuals who possess features within the range of normal. An exact ideal or normal does not exist. On the other hand, anyone who attempts to correct or alter facial features must have in mind the condition and appearance to be established.

The real justification for an "esthetic norm" is its usefulness. It makes it possible to visualize a problem so that it becomes intelligible, and so that critical judgment may

6. McCoy, J. D.: Applied Orthodontics, ed. 4, Philadelphia, Lea and Febiger, 1933.

be utilized in considering all the factors involved. By its help, we will be better able to see our way through a problem, at least to the extent of having a definite objective in view toward which we may strive (fig. 4).

Any disfigurement of the nose is produced by loss of tissue or by distortion of one or more component parts of the nasal framework from the position normally occupied in relation to the other parts or to the facial surroundings as a whole. In some instances, there may be both loss of tissue and malposition of the segments. Since noses are of infinite variety, it is imperative, when planning the reconstruction and executing the repair, to remember that the final result should be made to blend and harmonize with the configuration of the surrounding head and face, of which the nose is the most important part. Because of the wide normal variation, the correct proportions of a given nose will for the most part depend upon the character of the structures which immediately surround it. The aim of the reconstruction then is not to obtain perfect symmetry, but to bring an abnormality within the range of normal (fig. 9).

The Operation

Safian⁽⁷⁾, Sheehan⁽⁵⁾, Pickrell⁽⁸⁾, Fomon⁽³⁾ and others have described and illustrated the operative correction of various types of nasal abnormalities. The reader is referred to these articles for details of the operative technique.

In addition to employing the proper technical approach, one must exercise a definite esthetic sense in deciding the extent of the desired change (fig. 2, 3, 5, 7, 8). While a thorough knowledge of the anatomy, physiology, and surgery of the nose is a *sine qua non*, the artistic creative power is the important factor in the success of the operation. It has been said⁽⁵⁾, "This esthetic sense can be developed with training and experience if there is an inborn foundation for it; if not, it is as futile as attempting to make a musician of one who is tune deaf."

Summary

In rebuilding or in changing a nose, the plastic surgeon is dealing with material facts related to anatomy and physiology, and with

fundamental rules that have been formulated in regard to the proper ensemble of the facial elements. Before deciding to embark upon the project, however, he must also take cognizance of the patient's mental attitude. If it has become warped, it can in the end defeat the main objective—pleasing the patient—regardless of the fact that the reconstructed nose might be surgically and artistically as near perfection as the available material and skill will permit. The psychologic status of patients who seek facial corrections should, therefore, be considered.

Because of the natural prominence of the nose, any nasal deformity is conspicuous. The reconstruction of the defects by those properly trained and qualified offers very little difficulty for the patient, and will in a great many instances result in a greatly improved general appearance. The psychic importance of reconstructive surgery of the nose has been emphasized. A comparatively simple operation, performed under local anesthesia, often relieves the patient of a deformity which has been the source of mental anguish and anxiety. The counsel of "patient resignation" too often given by physicians and friends is unkind and unsound in the light of surgical achievements in plastic surgery.

THE TECHNIQUE OF BREAST FEEDING

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BLACK MOUNTAIN AND ASHEVILLE

The art of breast feeding is apparently becoming one of the lost arts, so far as a great many American physicians and nurses are concerned⁽¹⁾. It is not yet a lost art with American mothers, among whom there still exists a vast reservoir of good will toward natural feeding; even here, however, it is losing ground. The policy of a great many physicians—and it is difficult to say whether pediatricians or obstetricians lead in this unscientific attitude—seems to be: Keep hands off until breast feeding has shown itself to be unworkable, and then step in and take over with artificial feeding. When that

Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Pinehurst, May 5, 1948.

7. Safian, J.: *Corrective Rhinoplastic Surgery*. New York, Paul B. Hoeber, Inc., 1935.
8. Pickrell, K. L.: *Nasal Deformities and Their Repair*. *Surgery* 20:845-863 (Dec.) 1946.

1. (a) Sedgwick, J. P. and Fleischner, E. G.: *Breast Feeding in the Reduction of Infant Mortality*. *Am. J. Pub. Health* 11:153 (Feb.) 1921.
(b) Smith, C. H.: *The Diet of Young Infants*. *New York State J. Med.* 41:2395-2406 (Dec. 15) 1941.

proves difficult, it is too late to go back to breast feeding.

The paradox here consists in the fact that no physician of standing has ever gone on record as believing that bottle feeding is superior to breast feeding⁽²⁾; yet it is unusual to find a doctor who is willing to study seriously the physiology of lactation and suckling, and to learn a tithe as much about breast feeding as he knows about some form of artificial feeding⁽³⁾.

My firm belief, which is backed by my own experience and by a wealth of authoritative literature, is that the vast majority of American mothers can nurse their babies. Many can nurse them with very little effort, but there are a great many others who will not make a go of it except with informed medical assistance. These mothers need the conscientious supervision of a doctor who has made a close study of the factors involved, and can vary them as skillfully (and as scientifically) as he varies the contents of a formula or changes the prescription of a proprietary infant food.

I began some years ago to collect titles and articles on the subject of breast feeding. So far, I have found more than three hundred contributions⁽⁴⁾. You will, I think, be pleased to learn that divergent and bitterly opposing views have been expressed on every phase of this subject, just as on every other topic that doctors discuss and fight over. This fact raises my hopes for the increasing popularity of breast feeding; for doctors are apt to lose interest in any subject upon which there is anything like universal agreement.

Outline of Technique Employed

Today I propose to outline the technique of breast feeding that I have found effective for the vast majority of mothers. I believe any doctor can make it work—but only after he has modified it to suit each individual case. He can do that only by sitting down with the mother and learning what her problems are.

Prenatal period

Some months before the baby is to be born, the doctor should have a chat with the expectant mother to find out whether she wishes to nurse her baby. I have long since

given up crusading at this point. The advantages of natural feeding are presented—its relative ease, inexpensiveness, freedom from worry, and increased liberty for the mother, as compared with the cumbersome, confining, uncertain and expensive features of bottle feeding. It is stressed that the baby benefits from breast feeding both psychologically⁽⁵⁾ and by increased resistance to disease⁽⁶⁾. The mother is assured that not she, but her doctor, will be the one to do the worrying. Then she and her husband are left to decide the question. The answer is not often in doubt, if the situation has been presented fairly and honestly.

If the mother decides in favor of breast feeding, her breasts and nipples are examined. If the nipples are inverted, she is taught to pull them out gently and hold them for a few moments three times a day. In any event, she is told to sop them with pledgets of cotton dipped in alcohol, to toughen them for their coming ordeal⁽³⁾.

Postpartum period

After birth, the baby is put to the breast as soon as the mother's condition permits, and this process is repeated every four hours during the day and every six during the night. No attempt is made at first to do more than accustom him to the procedure; if he doesn't get much, his mother is reassured and told that it makes no difference. It has not yet been proved whether he gets enough colostrum to do him any good⁽⁷⁾, but at least we are keeping as close to Nature's plan as we can. Judging by what we know about the salutary effect of colostrum in cow's milk⁽⁸⁾ it is at least not unreasonable to assume that the human infant may derive some benefit from his mother's colostrum.

During these early days certain precautions are most important. There must be no so-called "prelacteal feeding"⁽⁹⁾ in the mistaken notion that the physiologic loss of weight which occurs in the first week should be lessened. Nothing but water is permitted, and that *after* the baby has nursed, not before.

5. Childers, A. T. and Hamil, B. M.: Emotional Problems in Children as Related to the Duration of Breast Feeding in Infancy, *Am. J. Orthopsychiat.* 2:134-142. (April) 1932.
6. Grulee, C. G.: Breast Feeding, *Proc. Interstate Postgrad. M. A. North America* (1943), pp. 133-137, 1944.
7. Abt, I. A.: Facts and Fallacies About Breast Feeding, *St. Paul M. J.* 17:281-296, 1915.
8. Smith, T. and Little, R. B.: The Significance of Colostrum to the New-Born Calf, *J. Exper. Med.* 36:181-198 (Aug.) 1922.
9. Brennemann, J.: *Dr. Brennemann's Notes on Infant Feeding, Maternal and Artificial*, Butler, Indiana. H. R. Farnham, 1919.

2. Strong, R. A.: The Decline of Breast Feeding, *Internat. M. Digest* 34:123-124 (Feb.) 1939.

3. Richardson, F. H.: *Simplifying Motherhood*, New York, G. P. Putnam's Sons, 1925.

4. Richardson, F. H.: Breast Feeding Comes of Age, in preparation.

Neither must any attempt be made to lessen the mother's moderate degree of discomfort attendant to the "coming in" of the milk. There must be no laxatives, no tight binding of the breasts—nothing more than a temporary limitation of fluids. Otherwise the oversupply of milk will quickly be succeeded by a deficiency. Nature is never wasteful, and she coordinates the supply with the demands of the infant, provided this automatic adjustment is not tampered with.

The mother must be taught to use *both* breasts at each feeding, alternating their order, and being sure to empty the first one completely each time. While it is the custom of many nurses and many hospitals to permit the use of only one breast at a nursing⁽¹⁰⁾, few mothers have enough milk to use but one breast at a feeding⁽¹¹⁾. The nursing time should be limited only by the necessity of conserving the nipples. The time-honored twenty-minute nursing period is distinctly "out," in spite of the published reports that the baby gets most of his supply during the first two to eight minutes⁽¹²⁾.

Critical periods

Every mother should be forewarned that there are certain critical periods when breast feeding trembles in the balance. These occur when she first sits up in bed, when she first gets out of bed, when she goes home from the hospital, when she first attempts to resume housekeeping—in fact, whenever she takes up additional duties that tire her. It is fatigue that cuts down milk supply, and not the mother's failure to stuff herself. She may eat as much or as little as her appetite dictates, provided only that she takes a quart of the best milk obtainable every day, and drinks a glass of water half an hour before each nursing⁽¹²⁾.

Breast feeding is also threatened when the mother loses fluid from her body, as when she perspires freely, when she has a slight diarrhea, and when menstruation is re-established. (When so-called "menstrual milk" produces "colic," it is because its scantiness⁽¹³⁾ causes hunger, and for no other reason.) What shall she do at such times—or at any other times when she has the slightest doubt that the baby has taken enough to

satisfy him?

Complementary feeding

The offering of a "complementary" or completing feeding at such times, using for this purpose whatever artificial feeding the doctor would ordinarily prescribe for a baby of the same age and size who had to be weaned, gives the youngster an opportunity of making up for any lack of supply on his mother's part. This may be employed at any time—even during the first few days (after the colostrum has been succeeded by milk) if the secretion of true milk starts slowly or if it seems inadequate. Complementary feeding must be offered only *after* the breasts have been emptied by the baby; if it is given *before*, he is very likely to fail to supply the stimulation of sucking necessary to maintain adequate milk secretion.

What about the danger of overfeeding—that bugbear we were taught as medical students to fear, with its diagnostic signs of vomiting, "colic," flatulence, bad stools, eczema, and too rapid gain in weight? Frankly, I am convinced that it just cannot be done, with all due respect to the authorities who say that it occurs frequently. If you have the patience and know-how to persuade a nursing baby to take more food than he wants, then you are a better man than I am. Even if you should succeed, the baby always has the last word, and can regurgitate any overplus. (Any time he spits up, by the way, for any reason except real illness, he should be permitted and even encouraged to begin his whole meal right over again, if he will do so. Regurgitation in an infant is accompanied by no nausea; he "swallows up" almost as readily and with as little effort as he "swallows down.") I believe that a few such trials will convince the unprejudiced observer that it is impossible to overfeed the nursing infant. Yet it is only fair to state that Charles Hendee Smith believes the reverse to be the case⁽¹⁴⁾.

"Gas" and colic

How about "gas"? There is no such thing as gas from indigestion in the baby fed on his mother's milk. To be sure, he may gulp down enough air to fill up his stomach and so reduce his capacity for food before he has

10. Witkin, M.: Newer Concepts of Breast-Feeding. *Brit. M. J.* 1:411-412 (Mar. 31) 1945.

11. Turner, M. L.: Some Observations from Nature. *Tr. Sect. on Diseases of Children of A.M.A.*, 1923.

12. Richardson, F. H.: Critical Periods in Breast Feeding. *Hygeia* 20:224-226 (Mar.) 1942.

13. Grulee and Caldwell, however [Grulee, C. G. and Caldwell, F. C.: The Influence of Menstruation on Breast-Milk. *Am. J. Dis. Child.* 9:374-380 (May) 1915] found "a period of increase beginning with the first day of menstruation and lasting from 10 days to 2 weeks thereafter. Then there occurred a diminution . . . which reached its lowest point 4 to 7 days previous to menstruation after which there was a gradual increase."

taken enough to carry him over until his next feeding. The x-ray pictures of Smith and LeWald demonstrate this occurrence beautifully⁽¹⁴⁾. To obviate it, most mothers are familiar with the process inelegantly known as "burping" or "bubbling." This consists in placing the infant over the shoulder or on the knee and patting him, none too gently, on the back until the bubble of air (which is *not* "gas" from indigestion, as it is so often assumed to be) escapes. Inasmuch as this procedure makes more room in the stomach, the baby should be put back on the breast and allowed to fill the space thus made available.

Colic can usually be explained on the basis of hunger, provided it is not confused with the very agonizing colicky cramps of intussusception, or perhaps with the pain of appendicitis. As these conditions have other diagnostic signs, there is not much excuse for mistaking them for "colic."⁽¹¹⁾ The cure of colic consists usually in giving more food—though this statement, like most of the others made here, has its vigorous dissidents as well as its strenuous defenders.

A device that has proved very helpful when the baby is not getting enough milk to carry him over the four-hour interval until the next feeding is stool training as an adjunct to nursing⁽³⁾. While modern psychologists object strenuously to any form of bowel training, it has been my experience that most babies easily fall into the habit of a regular evacuation before, during or after each feeding. The easiest way to establish this habit is by inserting a small soap stick into the rectum after each feeding, and then placing a small "lap chamber" against the baby's buttocks as he lies on his back in his mother's lap or on a table. Usually the soap stick is necessary only for a day or two. After the evacuation has made more intra-abdominal space available, the baby is put back on the breast and frequently gets a sizable increment of milk.

Feeding intervals

What about so-called "self demand"? A great deal has recently been made of this reversion to the bad old days when the baby pulled at his mother's dress whenever he wanted a nip, and kept her his slave for nine months, with never a minute's peace day or night. Most of us have obtained the good ef-

fects of this custom, without making the mother suffer from its obvious drawbacks, by permitting a reasonable latitude about her nursing hours. If she finds the baby unable or unwilling to go on a four-hour schedule at any time, the three-hour schedule may be substituted until he can be induced to take enough to carry him over the longer interval.

The 10 p.m. and 2 a.m. feedings can be combined advantageously by letting the child sleep after his 6 p.m. feeding until he wakes of his own accord—probably around midnight. He will probably give up his night feedings entirely around the end of the second month, if not earlier, provided he is getting enough to satisfy him.

Manual expression

No presentation of the subject of breast feeding would be complete that did not describe manual expression. This is emptying the breast by means of the best breast pump there is, the human hand⁽¹⁵⁾. The following method, which has been described by Dr. J. P. Sedgwick, should be taught all mothers.

"The breast is grasped about 1 or 2 cm. back of the colored areola, and a milking motion is carried out toward the nipples . . . No massage of the breast proper is allowed . . . The ducts which contain the milk extend but a short distance back of the areola. Any one who has ever seen a cow knows that the teats are milked and not the cow's bag."⁽¹⁶⁾

Conclusion

How many babies can be breast fed, and for how long? Statistics are available from demonstrations for those who want them⁽¹⁷⁾. My own experience, however, as well as the experience of many others who have taken breast feeding seriously enough to learn a technique for obtaining it, encourages me to believe that the vast majority of infants can be carried through the period of infant feeding on the breast. In most cases where breast feeding fails, it is the doctor who is at fault.

Discussion

Dr. McQueen Salley (Hendersonville): Since Dr. Richardson has invited me to disagree with him wherever possible, I shall take exception with him on the question of gas or air. I do not believe the

15. Davies, V.: A Simple Technic for the Manual Expression of Mothers' Milk, *Am. J. Dis. Child.* 70:148-149 (Sept.) 1915.

16. Sedgwick, J. P.: Establishment, Maintenance, and Re-institution of Breast Feeding, *J.A.M.A.* 69:417-418 (Aug. 11) 1917.

17. In Nassau County, New York, nine tenths of the mothers nursed for one month and two thirds for seven months (Richardson, F. H.: Universalizing Breast Feeding in a Community, *J.A.M.A.* 85:668-671 (Aug. 29) 1925); in Cortland, New York, 77 per cent nursed for nine months (Annual Report of the Division of Maternal, Infant, and Child Hygiene of the State of New York for the year 1926, p. 76).

14. Smith, C. H. and Le Wald, L. T.: The Influence of Posture on Digestion in Infancy, *Am. J. Dis. Child.* 9:261-282 (Apr.) 1915.

nursing baby ever swallowed air. I do know that the action of dilute hydrochloric acid on certain liquids does produce gas, and that is what happens with the nursing baby. I am convinced also that indigestion causes the green stools so frequently seen. As to an ironclad nursing interval, I never insist upon this. If the baby gets hungry before three hours, I permit him to nurse after two and one-half hours.

Dr. Richardson: I am going to ask Dr. Salley, who is an expert radiologist, to see if he can disprove the contention of Dr. Hendee Smith and Dr. LeWald, whom I quoted in my text. Their pictures show conclusively the occurrence of a large bubble of air in a baby swallowing in the prone position. I do not consider green stools significant in the nursing infant. I agree with Dr. Salley that the baby should determine his nursing interval; but if he gets enough he will usually go four hours.

Dr. Roy Smith (Greensboro): What foods should be denied the nursing mother?

Dr. Richardson: She can take any food which does not cause indigestion in herself.

Dr. Aldert S. Root (Raleigh): I sometimes find inverted nipples in infants. When this occurs, I instruct the mother to use gentle pressure to pull them out, so that when they grow up they may nurse their babies.

Dr. LeRoy Butler (Winston-Salem): What do you do for colic? Also will you tell us how frequently you succeed in keeping your babies on the breast?

Dr. Richardson: In my experience "colic" is almost always another name for hunger, although Dr. LaBruce Ward disagrees. Dr. Ward believes that many babies are hypertonic and have colic due to their heightened irritability.

As to the percentage of babies I am able to keep on the breast, I rarely fail if I have a mother and baby from birth. When I do fail, it is almost always because the mother, the attending obstetrician, or the family doctor is openly or covertly opposed to breast feeding.

Dr. Samuel F. Ravenel (Greensboro): It is gratifying in these modern days to discover that a woman's breasts have a utilitarian purpose. A few of the women that I encounter in my practice are able and willing to nurse their babies. Most of these are phlegmatic, rather bovine-type farm women with vigorous, ravenous infants and with husbands who are stone deaf. The majority of mothers, I regret to say, cannot nurse their infants. Frank talks about the sin of driving babies to the bottle. In my experience, women who are forced to nurse their babies are often driven to another kind of bottle by the baby's constant screaming. Seriously, it does seem to me that, of the women who conscientiously try to nurse their babies, the majority fail.

Dr. Richardson: The attending physician who is not completely convinced of the feasibility as well as the advantages of breast feeding will have difficulty in selling the article on which he is not himself sold. I will admit that many women consider they will be hampered and restricted if they nurse their babies. I believe it is the duty as well as the privilege of the physician to make breast feeding less confining than artificial feeding.

Dr. J. LaBruce Ward (Asheville): This is a very important paper, and I agree with it in part. I don't agree, however, that a soap stick should be used to make the baby have a movement.

I believe that the factor which has contributed most to the failure of mothers to nurse their babies, for the past ten or fifteen years, is prelacteal feeding, which we should all oppose.

I think the doctor is largely to blame for not

making mothers nurse their babies. In my experience, at least, the baby is not considered as belonging in the domain of the pediatrician until the neonatal period is past. Frequently the pediatrician is called in when a baby is three or four days old, after he has already been put on a bottle and his mother has been given stilbestrol.

Breast feeding gives the baby a sense of belonging to the mother, a sense of security, which he does not have when he is on the bottle. I explain the advantages of breast feeding to the mother, and if she refuses to try it, I decline to treat the baby.

Dr. Richardson: I admire Dr. Ward's courage, but I have given up trying quite so hard to convert mothers to breast feeding. If they are willing to do their best, I can always promise them success; but such willingness on the mother's part is almost essential to the maintenance of breast feeding.

TREATMENT OF SIMPLE FRACTURES OF THE SHAFT OF THE FEMUR BY A FIXED TRACTION SPICA

A Preliminary Report

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Immobilization of fractures of the shaft of the femur by a method incorporating traction and countertraction into a single or double hip spica has been employed by the senior author for many years, with good results. It has been used in all age groups and both sexes. The advantages of this method are that it obviates the necessity for skeletal traction and long hospitalization.

Throughout this paper the term "fixed traction spica" will be used to indicate the apparatus described herein.

Method

Premanipulative phase

Patients admitted to the hospital with simple fractures of the femoral shaft are seen first in the emergency room, where a Thomas leg splint is applied. A limited physical examination is made, and sedatives and analgesics are administered. Shock therapy is given if necessary. Later such patients are moved to the x-ray room on the rolling ambulance litter and carefully lifted to the x-ray table, a member of the orthopedic house staff supervising the handling of the patient.

After satisfactory anterior-posterior and

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lateral x-ray films are obtained, the patient is usually transported to his room, where the Thomas leg splint is removed and adhesive traction applied. The leg is placed on a flat pillow, with the heel extending beyond the pillow edge, and is immobilized with sandbags along either side. Approximately 10 pounds of weight is applied to the extremity. The necessary laboratory examinations are made, and a thorough physical examination is done, care being taken to maintain traction and immobility of the affected leg. The foot of the bed is then raised on low shock blocks (4 inches) so that the body may act as countertraction. If both femurs are fractured, adhesive traction is applied to each lower extremity and the foot of the bed is raised higher to afford more countertraction.

Adhesive traction is applied by the following method: The leg, if hairy, is shaved and painted with tincture of benzoin. Three-inch-wide adhesive tape is then used to strap a wooden spreader block to the leg, about 2 inches below the foot. This tape is carried up both sides of the leg at least as far as the mid-thigh. The spreader block is placed close enough to the plantar surface of the foot to aid in maintaining dorsiflexion. A short, three-inch-wide piece of tape covers the proximal side of the spreader block and the adhesive side of the tape over the malleoli. If the spreader block is wide enough and the adhesive tape properly placed, there will be no irritation of the malleoli. To add further protection, the ankle may be wrapped loosely with wide gauze bandage before application of the adhesive tape. One-inch-wide adhesive tape, previously unrolled, is applied carefully but loosely in a widely spaced spiral from about two inches above the malleoli to the mid-thigh. Care is taken to avoid the head of the fibula and the patella when applying the one-inch adhesive tape. This adhesive traction is to be incorporated later into the spica. Skin traction has proved to be adequate, and skin irritation has not been a complication.

Manipulative phase

Usually the patient is completely evaluated by the morning after admission. He is then transported to the orthopedic room, and after the administration of an anesthetic is placed on the fracture table. The lower extremities are in moderate abduction, traction is made on both ankles, and the knees

are slightly flexed.

The ankles are wrapped in sheet wadding cotton, over which wide muslin bandage is applied in a double half-hitch manner and tied to the foot pieces with the feet at 90 degrees dorsiflexion. The spreader block and adhesive tape distal to the ankle and not adherent to it are pushed out of the way posteriorly. Any necessary traction and manipulation are now carried out, and the alignment is checked fluoroscopically until satisfactory reduction is accomplished.

A generous amount of sheet wadding cotton is used to pad the lower abdomen, pelvis, and hips, as well as the unaffected thigh down to the knee and the affected thigh down to the ankle. Additional pads of cotton or felt are used to pad the trochanteric regions and the crests of the ilia.

Eight-inch, slow-drying plaster is used to place a pelvic band over the sheet wadding. The upper edge of this band is usually located at the umbilicus. Usually two rolls are utilized in this step. Next perineal straps (made by sewing together two pieces of muslin about three inches wide and thirty-six inches long, stuffed with cotton, and pressed flat⁽¹⁾) are snugly applied up over the plaster pelvic band anteriorly and posteriorly. The perineal straps must be applied tightly and pulled upward and outward against the junction between thigh and buttock at an angle of about 45 degrees. Each strap is held under tension by an assistant, and the ends are parallel and well above the upper edge of the plaster pelvic band. Additional plaster is applied to the band to cover the straps, and the ends are then turned down and covered with more plaster. This step establishes the countertraction for the femur.

Slight flexion of the knees is attained by carrying three- or four-inch gauze bandage under the knee outside the cotton padding and up to an overhead horizontal bar.

Six-inch, slow-drying plaster is wrapped around both thighs to just above the knees in a circular and figure-of-eight manner. The inguinal regions of the spica are reinforced with plaster slabs bilaterally. A wet plaster slab (one roll) is now placed between the gauze suspension from the inguinal region of the affected thigh over the anterior aspect of the knee to the mid-tibial region.

1. The perineal straps are fashioned after the Taylor hip splint used for the treatment of tuberculosis of the hip.



Figure 1

An iron rod, bent into a rectangular shape and open at one end, is held by an assistant, while wet plaster is loosely draped over the lower parts of the parallel bars to form a sling supporting the padded calf of the affected leg. This rod reaches from mid-thigh to approximately six inches beyond the foot piece of the table. The upper or open ends of the rod are solidly incorporated into the portion of the spica above the knee by the addition of more plaster. Now a thin layer of plaster is applied over the lower part of the parallel rods, snugging down the draping plaster ends of the sling as well as covering the anterior plaster slab from the knee down to the low tibial region.

After the plaster has become firm, the ankle traction straps and padding on the affected side are carefully removed. At the same time the traction on the unaffected side is reduced, but this foot remains bound to the foot piece of the table.

The rope through the middle of the spreader block of Buck's extension is now wrapped around the block in an anterior-posterior direction one and one half times, and tied where the rope comes through the hole. Two long, three-inch-wide strips of automobile innertubing are carried between the rope and the spreader, one on either side of the hole (one strip anterior to the hole and one posterior). The ends of the rubber strips are pulled over the closed end of the rod and tied under the desired tension in square knots. A safety pin is run through both ends of each rubber strip just distal to

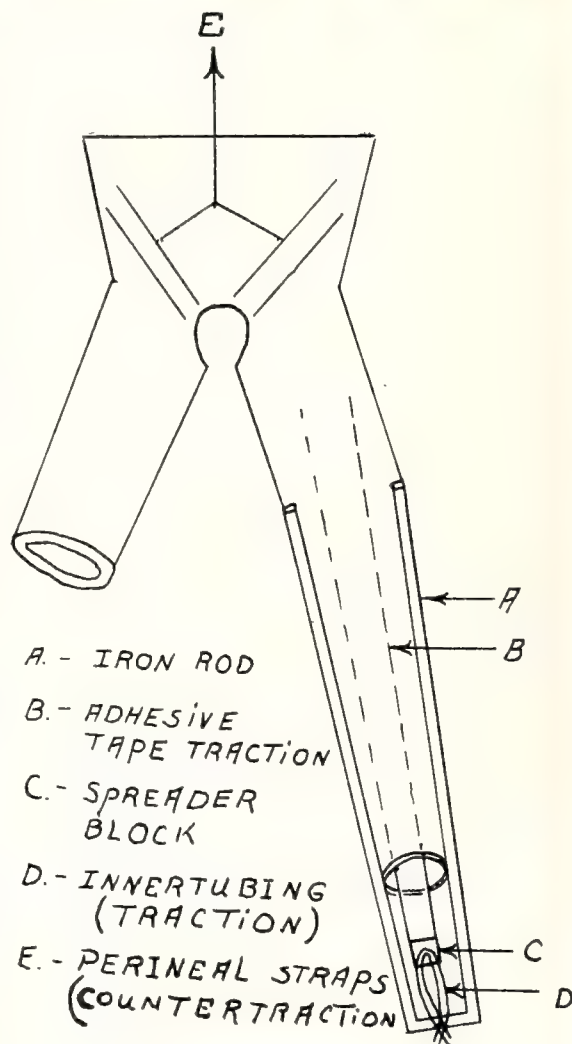


Figure 2

the knot to prevent slipping.

A crossbar of plaster is applied between the thighs just above the knees and bowed anteriorly to facilitate placement of a bedpan. The bar also affords a grasping point to facilitate turning the patient.

By this time the plaster is sufficiently dry to remove the wide gauze bandage suspending the knees. It is loosened by a see-saw motion and one side is cut where it enters the plaster; it is then pulled out the other side. Care must be exercised to remove this piece of material without breaking it; if allowed to remain in place, it may cause pressure against the popliteal region.

The pubic region of the spica is trimmed and the unaffected lower extremity is released from the foot piece of the table. When the fixed traction spica is deemed dry enough, the patient is transferred to a rolling litter in the prone position, face to the side, so that the gluteal region of the spica may be trimmed. Laterally the visible portions of the perineal straps form the margins and prevent the plaster from rubbing the skin of the buttocks.

When both femurs are fractured, a double fixed traction spica is applied. Both lower extremities are put up in fixed traction, with the usual two perineal straps acting as countertraction.

Postmanipulative phase

The patient, attended by an anesthetist, is transported to his room, where a heat cradle is placed over the spica. The following day anterior-posterior and lateral x-rays are taken to check the position of the fragments. At this time correction in the amount of traction may be made if necessary. Wedging of the spica, although not employed in the cases to be reported, may be done if necessary.

After the fracture is considered in satisfactory position, the plaster thoroughly dry, and the general condition of the patient satisfactory, he may be discharged home, to return to the office or clinic in about one month for a repeat x-ray examination. If x-ray films are satisfactory, the patient is encouraged to contract, voluntarily and periodically, the quadriceps and hamstring muscles of the completely immobilized lower extremity. At the end of six to eight weeks (from the time of reduction) for young children, ten to twelve weeks for adolescents, and about sixteen weeks for adults, another visit is made. At this time a window is cut

out over the fracture in the anterior part of the spica, and films are made. If these show the fracture well healed, the spica is removed.

Following removal of the spica, a regimen of physiotherapy to be carried out in the home or outpatient department is outlined. The patient is taught to walk with the aid of crutches, then with a cane until the muscles are strong enough to permit unaided weight-bearing.

Comparison with Other Methods

The fixed traction apparatus described above differs from Hoke's traction apparatus in that the latter incorporates the entire leg and foot of the unaffected side in plaster; hence traction on the affected side produces countertraction against the sole of the foot of the unaffected side. In the apparatus presented here countertraction is made possible with perineal straps, and the unaffected limb is free from the knee down.

The method also differs from Roger Anderson's well-leg traction, since the latter does not include the pelvis in plaster but again utilizes countertraction in the well leg by means of a metal stirrup incorporated in plaster and attached to a Kirschner wire or pin through the lower end of the tibia of the affected side.

Review of Thirty-One Fractures Treated by This Method

Age and sex distribution

The series of cases upon which this report is based is made up of 31 fractures occurring in 28 patients. The ages of the patients ranged from 9 months to 93 years (table 1). Twenty of the patients were males and 8 were females—a ratio of 2:1.

Table 1

Age Group	No. Patients
Less than 2 years	3
3-15 years	15
16-20 years	4
21-80 years	4
Above 80	2
Total	28

Types and locations of fractures (tables 2 and 3)

All cases presented were fresh fractures except two. In one of these, seen two and a half months after injury, callus formation had taken place, but malunion was present. In the other, seen five weeks after injury,

Table 2
Types of Fractures

	Displaced	Displaced- Comminuted	Undisplaced	Total
Transverse	17	1	2	20
Oblique	4	3	1	8
Spiral	2		1	3
Total	23	4	4	31

Table 3
Location of Fractures

Location	No. Cases
Upper third	6
Junction of upper and middle thirds.....	2
Middle third	11
Junction of middle and lower thirds.....	6
Lower third	6
Total	31

displacement of the fragments had occurred. Twenty-three fractures—about two thirds of the series—were displaced. Four fractures were displaced and comminuted. The most common type of fracture was a transverse displaced fracture in the middle third. In only 2 cases were accompanying tibial fractures present. Three cases were bilateral fractures of the femoral shafts.

Length of hospitalization and results of treatment (table 4)

Four patients (1 infant and 3 children) were treated as outpatients. One patient with bilateral femoral shaft fractures, a right tibial fracture, and a displaced upper right femoral epiphysis was hospitalized fifty-seven days. The average period of hospitalization for all cases was nine days. More than half of the patients were hospitalized one week or less.

In this small series of 31 fractures of the femoral shaft, none of which were compound, satisfactory healing was obtained in all cases except that of one aged patient who died on the seventh postmanipulative day in congestive heart failure. This patient was 93 years old. One 86-year-old female obtained satisfactory healing of the fracture but never was able to walk unaided. Three cases required open reduction. One patient, a 17-year-old girl in whom the spica was removed nine weeks after reduction, refractured her femur in bed while being assisted on a bedpan.

Other Uses of the Method

Although it is not within the scope of this paper to report results following the use of the fixed traction spica in other orthopedic conditions of the hip and femur, nevertheless we wish to impress the reader with the

Table 4
Average Results by Age Groups

Age Group	Time Required for Healing (Determined by X-Ray)	Time Required for Unaided Self-Locomotion
Under 2 years	36 days	49 days
2-5 years	1.58 months	2.13 months
6-10 years	2.50 months	3.30 months
11-15 years	2.66 months	4.66 months
16-20 years	3.95 months	5.18 months
21-80 years	3.5 months	6.00 months

versatility of the apparatus. It has been used with success in the following conditions:

1. Simple fractures of the femoral shaft.
2. Slipped femoral epiphysis—conservative treatment or prior to reduction and internal fixation.
3. Tuberculosis of the hip—conservative treatment or prior to fusion.
4. Osteomyelitis of the femoral head, neck, and acetabulum. The fixed traction spica is an adjunct to treatment, since it immobilizes the part, gains leg length where there is destruction of bone, and in time permits evaluation of new bone formation with the part at rest.
5. Undisplaced fracture of the femoral neck.
6. Intertrochanteric fractures when operation is contraindicated.
7. Intracapsular femoral fractures.
8. After open reduction with screw fixation.
9. Pathologic fracture of the femur.

Summary

1. A series of 31 fractures of the shaft of the femur treated by closed reduction and fixed traction are presented as a preliminary report.
2. Satisfactory healing was obtained in all cases except one (a 93-year-old woman who expired on the seventh day).
3. We believe that the healing time was not increased by the use of this method of treatment.
4. The average period of hospitalization was nine days.
5. Expense to the patient and institution is minimal.
6. The dangers accompanying open reduction or skeletal traction are avoided.

Conclusions

We realize that similar results can be obtained by more than one method of treatment, and do not intend to leave the impression that this method is the best. However, bed space is limited in many institutions,

and this method affords a short period of hospitalization for the majority of cases. In our hands results seem equally as satisfactory as with other methods requiring much longer hospitalization.

THE EFFECT OF TOBACCO ON ESTRUS, PREGNANCY, FETAL GROWTH, AND LACTATION

A Critical Review of the Literature

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The attempt to demonstrate toxic effects of tobacco in its various forms is as old as the history of its use. In the earlier medical literature it was both condemned and acclaimed, being described as deleterious to digestion and sexual desires, but recommended in the treatment of catarrh, hemorrhoids, and hydrocephalus⁽¹⁾.

During recent years, a vast amount of conscientious work has been done in an attempt to demonstrate the effects of tobacco and its constituent, nicotine, on the human organism. Numerous investigators have studied its effect on the cardiovascular, gastrointestinal, respiratory, and central nervous systems. The measurable effects on mental and physical efficiency have also been recorded.

The past two decades have seen tobacco production and consumption grow by leaps and bounds. Since a large part of the increase in consumption is attributed to the woman smoker⁽²⁾, considerable research has been directed to the possible toxic effects of nicotine on certain physiologic processes of the female—namely, estrus, pregnancy, fetal growth, and lactation. This research, both experimental and clinical, is reviewed critically in the present report, which is intended as an introduction to clinical studies to be published in the future.

Numerous animal experiments have been

carried out to obtain information which might have some bearing on the use of tobacco by the pregnant or lactating woman. However, in the interpretation of data thus obtained, many authors have ignored certain basic differences between animal and human subjects, such as (1) the relative dose of nicotine as milligrams per kilogram of body weight, (2) the mode and rate of nicotine administration, (3) the matter of tolerance or habituation to nicotine, (4) species differences in the response to nicotine.

The amount of nicotine consumed and the rate of consumption during cigarette smoking vary with several factors, including composition of the cigarette, speed of smoking, temperature of the smoke, fraction of the cigarette smoked, and the amount of smoke inhaled⁽³⁾. Under the usual conditions for smoking, it may be assumed that a smoker absorbs approximately 3 mg. of nicotine from one cigarette in a smoking period of five to ten minutes. For a woman weighing 60 Kg. (132 pounds), this is a dose of 0.05 mg. of nicotine per kilogram, administered at a rate of 0.005 to 0.01 mg. per kilogram per minute. The moderate smoker who uses ten cigarettes per day absorbs a total of 0.5 mg. of nicotine per kilogram in ten separate doses distributed over a ten- to fifteen-hour period. This dose and rate of administration is only a small fraction of that used in the majority of animal experiments reported to date.

Information on tolerance and species differences among animals is limited to a few scattered observations.

Effect on the Estrus Cycle

Various methods and species of animals have been used in an attempt to demonstrate a direct or indirect effect of nicotine on the estrus cycle. The earliest experimental work was that of Ogata⁽⁴⁾. He was unable to demonstrate by careful macroscopic studies any pathologic changes in the ovaries of sexually mature young rabbits injected with a physiologic saline extract of cigar smoke. Histologic studies were not done. Thienes and Behrend⁽⁵⁾, using injections of a 0.1 per cent

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1. (a) Willich, A. F. M.: *Lectures on Diet and Regimen*, ed. 2, Boston, Joseph Nancrede, 1800. (b) Darwin, E.: *Zoonomia; or the Laws of Organic Life*, ed. 3, Boston, Thomas and Andrews, 1809.
2. Thompson, W. B.: Nicotine in Breast Milk. *Am. J. Obst. & Gynec.* 26:662-667 (Nov.) 1933.

3. Bogen, E.: Composition of Cigaretts and Cigaret Smoke. *J.A.M.A.* 93:1110-1114 (Oct. 12) 1929.

4. Ogata, S.: Preliminary Report of Studies on the Influence of Alcohol and Nicotine upon the Ovary. *J. M. Research* 40:123-127, 1919.

5. (a) Behrend, A. and Thienes, C. H.: Chronic Nicotinism in Young Rats and Rabbits; Effect on Growth and Estrus. *J. Pharmacol. & Exper. Therap.* 46:113-124 (Sept.) 1932; (b) Thienes, C. H.: Failure of Nicotine to Alter Estrus Cycle in White Rat. *Proc. Soc. Exper. Biol. & Med.* 28: 710-711 (April) 1931.

solution of pure nicotine, in a dose of 5 mg. per kilogram twice daily, failed to produce any changes in the estrus cycle of white rats. The cycle was closely followed by daily vaginal smears.

According to Campbell⁽⁶⁾, Unbchan and Nakasawa reported that nicotine causes the ovaries of white mice to cease their production of the estrogenic-producing hormone. Nakasawa further observed that atrophy of the ovaries, uterus, and vagina took place, and that continued injections of nicotine prevented the occurrence of pregnancy. Lee⁽⁷⁾ found that daily nicotine injections into white mice stopped the estrus cycle and produced atrophy of the vaginal mucosa and endometrium, with hyperplasia of the vaginal submucosa. He also noted rapid ripening of the graafian follicles followed by cloudy degeneration, indicating that nicotine first stimulates but later inhibits ovarian activity. In one group of animals an injection of luteohormone or anterior pituitary extract, given concomitantly with the nicotine, markedly inhibited the changes just described.

Winkler and Fenner⁽⁸⁾, reporting on clinical studies among women workers in tobacco factories, noted a high percentage of delayed menarche, early menopause, menstrual disturbances, dysmenorrhea, and endometritis. These investigators also substantiated the experimental evidence of Lee as to the inhibition of nicotine by luteohormone, and concluded that female animals have a much higher resistance to nicotine intoxication than do males. Myers, however, quoting numerous opinions and without presenting clinical or experimental data, concluded that "according to reports the female is injured more than the male."⁽⁹⁾

Wilson and De Eds⁽¹⁰⁾ found that when healthy female rats were fed a diet containing 0.025 per cent nicotine, which gave them a daily dose of 12 to 15 mg. per kilogram of body weight, the menses became irregular. When the nicotine dose was doubled, the food intake was reduced and the normal men-

strual rhythm stopped completely in three days. A control group was placed on an insufficient diet without the addition of nicotine. The menstrual cycle stopped in eight days—an indication that malnutrition in experimental animals may be a factor in explaining the divergent results reported by different investigators. This observation suggests that the alleged effect of nicotine on the menstrual cycle may be the result of an inadequate diet.

Effect on Pregnancy and Fetal Growth

A great deal of work has been directed toward the establishment of an antepartum regimen free from any deleterious influence on the mother or fetus. This has led a number of workers to investigate the possible effect of cigarette smoking on pregnancy. Chiasson⁽¹¹⁾ found exceptionally high fertility and abundant lactation in a group of French women who were habitual pipe smokers. A somewhat analogous observation has been made in experimental animals⁽⁷⁾.

Essenberg, Schwind, and Patras⁽¹²⁾ used two procedures for demonstrating the effect of nicotine on the offspring of albino rats. One group of pregnant rats was placed in an atmosphere of cigarette smoke for three minutes daily. The other group received a daily subcutaneous injection of 0.5 to 1.0 cc. of a 1:1000 nicotine solution. This dose, probably 1.5 to 3.0 mg. per kilogram of body weight, produced characteristic nicotine convulsions within one minute of injection. Two thirds of the offspring from both groups were underweight, because of the absence of the normal body fat. There was no marked effect on skeletal growth—a fact previously observed by Behrend and Thienes^(5a). Of the females injected with nicotine, 63.3 per cent lost one or more of their young before weaning, and 33.3 per cent lost all of their young; in a control group which had not received nicotine in any form only 23.3 per cent lost one or more of their young before weaning. Individual variation was considerable. Even though these authors stated that they subjected rats "to tobacco smoke that would approximate human smoking of about a package of cigarettes per day," a daily three-minute exposure to smoke cannot be consid-

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8. Winkler, H. and Fenner, R.: Inwieweit beeinflussen die Sexualhormone die Nicotintoxizität, *Klin. Wchnschr.* 21: 1034-1037 (Nov.) 1942.

9. Myers, J. L.: Influence of Smoking on Health, *Tr. Am. Laryng.* 62:340-356, 1940.

10. Wilson, R. H. and De Eds, F.: Nicotine Toxicity: Effect of Nicotine-Containing Diets on Estrus Cycle, *J. Pharmacol. & Exper. Therap.* 59:260-263 (March) 1937.

11. Chiasson, M. J., cited by Johnson, W. M.: Effects of Tobacco Smoking, Correspondence, *J.A.M.A.* 93:1909 (Dec. 14) 1929.

12. Essenberg, J. M., Schwind, J. V., and Patras, A. R.: Effects of Nicotine and Cigarette Smoke on Pregnant Female Albino Rats and Their Offspring, *J. Lab. & Clin. Med.* 25:708-717 (April) 1940.

ered identical with human smoking, either as to the nicotine dose or as to rate of absorption.

In a somewhat similar experiment, Schoeneck⁽¹³⁾ blew the smoke of one cigarette into the nostrils of a rabbit each day. The weight of the offspring from rabbits exposed to smoke was approximately 17 per cent less than the weight of those in the control series, and the stillbirth rate was ten times greater than that in the controls. This author assumed that the nicotine dose given to the rabbit was equivalent to that taken by a human being who smokes twenty cigarettes per day; but he overlooked the difference in the mode of administration. The human smoker receives twenty separate doses, each of about 0.05 mg. per kilogram, while the rabbits received in a single dose relatively twenty times the amount of smoke taken at one time by the human being, and presumably twenty times the amount of nicotine.

Mgalobeli⁽¹⁴⁾, on the basis of limited clinical data, concluded that among women who work in tobacco factories there are fewer pregnancies, more abortions, and a greater infant mortality rate in the age group from 1 to 3 years. Campbell⁽¹⁵⁾ is of the opinion that excessive smoking, in a small proportion of maternity cases, has a detrimental effect on the patient's general health. He reported on an analysis of replies from seventy-five members of the American Society of Obstetrics and Gynecology, whose opinions strongly indicated that smoking, except in moderation, is unfavorable to the health of expectant mothers. The same author, however, was unable to demonstrate any histologic changes in the ovaries and uteri of 2 healthy female rabbits which had received 10 mg. of nicotine intravenously or 40 mg. subcutaneously three times each week for nine months.

Proof that nicotine crosses the placental barrier is lacking. Sontag and Wallace⁽¹⁶⁾ found that the fetal heart rate was increased by about 5 beats per minute after the mother had smoked a cigarette. The recordings were made by auscultation, however, and the differences observed may be due to individ-

ual error. Five subjects were used, one being a non-smoker. In this last case, a decrease in the fetal heart rate was recorded. The increase of rate in the smokers, the authors felt, was suggestive that nicotine crosses the placental barrier. There is a possibility that this deduction may be correct, as smoking produces an increase in the heart rate of the adult⁽¹⁷⁾.

Effect on Lactation

In a very careful study, Hatcher and Crosby⁽¹⁸⁾ have shown that massive doses of nicotine inhibit lactation in cats for about six hours. Regardless of the dose, no toxic symptoms could be produced in nursing kittens and no permanent effects on lactation could be demonstrated. These authors found that 5 mg. of nicotine per kilogram, given in four doses over a period of two and one-half hours, made a cow sick and suppressed lactation for several hours. The next day—twenty hours after the last nicotine dose—the cow appeared normal and the milk flow was normal. This dose of nicotine is massive and would correspond to that obtained by smoking 100 cigarettes in two and one-half hours.

In a report to Hatcher⁽¹⁸⁾, members of the Department of Obstetrics and Gynecology of Cornell Medical College stated that they had not observed that smoking decreased lactation or had any effect on the nursing infants. Perlman and Dannenberg⁽¹⁹⁾ recorded similar findings in human mothers. A definite correlation was noted between the number of cigarettes smoked and the quantity of nicotine excreted in the milk and urine, but no effect on the nurslings was demonstrated. It was suggested that a tolerance to nicotine on the part of the infants may explain the lack of toxic symptoms. In this connection it is worth noting that young rats develop a marked resistance to the convulsive action of nicotine, while adults do not⁽²⁰⁾.

Other studies on the nicotine content of milk have been reported. Thompson⁽²⁾ concluded that one of his patients eliminated in her milk 0.06 to 0.24 mg. of nicotine in a

13. Schoeneck, F. J.: Cigarette Smoking in Pregnancy. New York State J. Med. 41:1945-1948 (Oct. 1) 1941.
14. Mgalobeli, M.: Einfluss der Arbeit in der Tabakindustrie auf die Geschlechtssphäre der Arbeiterin. Monatschr. f. Geburtsh. u. Gynäk. 88:237-247 (June) 1931.
15. Campbell, A. M.: Effect of Excessive Cigaret Smoking on Maternal Health. Am. J. Obst. & Gynec. 31:502-508 (March) 1936.
16. Sontag, L. W. and Wallace, R. F.: Effect of Cigaret Smoking during Pregnancy upon Fetal Heart Rate. Am. J. Obst. & Gynec. 29:77-83 (Jan.) 1935.

17. Grollman, A.: The Cardiac Output of Man in Health and Disease, Springfield, Illinois, Charles C. Thomas, 1932, p. 159.
18. Hatcher, R. A. and Crosby, H.: Elimination of Nicotine in Milk. J. Pharmacol. & Exper. Therap. 32:1-6 (Nov.) 1927.
19. Perlman, H. H., Dannenberg, A. M., and Sokoloff, N.: Excretion of Nicotine in Breast Milk and Urine from Cigaret Smoking; Its Effect on Lactation and Nursling. J.A.M.A. 120:1003-1009 (Nov. 28) 1942.
20. Behrend, A. and Thienes, C. H.: Development of Tolerance to Nicotine by Rats. J. Pharmacol. & Exper. Therap. 48:317-325 (July) 1933.

twenty-four hour period, and demonstrated the presence of nicotine in milk of two other patients. Chemical and biologic tests indicated no more than traces of nicotine in milk from a woman who smoked twenty to twenty-five cigarettes per day⁽¹⁸⁾. Similarly, only traces of nicotine were found in milk from a cow which had received large doses of nicotine⁽¹⁸⁾.

Campbell⁽¹⁵⁾ felt that it is in the nervous, high-strung, excitable individual who smokes excessively that lactation is diminished. Thompson⁽²⁾ concluded that nervousness is a definite factor in suppressing lactation, regardless of nicotine intake, and that the effect of the drug is not the sole or even the chief factor involved. In this connection Johnson⁽²¹⁾ stated, "As to its effect on the nervous system, I am inclined to think that the average highly nervous individual smokes to excess because he is nervous, rather than that he is nervous because he smokes to excess. In the average individual the effect of a smoke seems to be more soothing than stimulating."

Comment

Numerous factors must be considered in judging the clinical value of studies reviewed here. A sharp distinction must be made between acute nicotine poisoning and the chronic effects produced by habitual use of tobacco, especially cigarette smoking. The use of massive doses of nicotine in experimental animals has yielded much valuable information on nicotine poisoning. Such data have some bearing on the acute poisoning which may result from accidental or deliberate ingestion of nicotine insecticides by human beings. Under no circumstances should it be assumed that chronic effects of nicotine in the human subject are similar to acute effects of nicotine in animals. This error in reasoning has been made by several authors quoted here. To date, there have been no animal experiments which fully simulate smoking by the human being. Hence, no analogy can be drawn from the experimental data at hand.

A second defect in several papers reviewed here is the presentation of arbitrary opinions on smoking without either experimental or clinical data which support the author's views^(9,15).

Little objective evidence is available as to

the effect of nicotine on the physiologic processes of the human female. By far the largest part of the work reviewed is based on clinical observation, and here the variance of opinions is outstanding. In an attempt to show some correlation between the number of cigarettes consumed and toxic manifestations, the majority of the researchers have failed to consider the possibility of other factors which may influence their observations. Among these factors is the presence of products other than nicotine in tobacco, the degree of nicotine absorption⁽²²⁾, the variable nicotine content of different brands⁽³⁾, individual sensitivity to tobacco⁽²³⁾, the speed of smoking⁽³⁾, and the fraction of cigarette consumed.

Conclusion

Much research work of a high standard must be done on the use of tobacco by the human female before definite conclusions concerning its toxicity or lack of toxicity can be drawn. The situation has not changed since 1932, when Behrend and Thienes^(5a) wrote, "A critical review of the subject of chronic poisoning by tobacco or nicotine indicates that we have a dearth of dependable data upon which judgment can be based."

22. Chapman, D. G.: Effects of Tobacco Smoking on Vascular System, *Virginia M. Monthly* 61:454-456 (Nov.) 1937.

23. (a) Herrell, W. E. and Cusick, P. L.: Effect of Inhalation of Tobacco Smoke on Vascular System, with Reference to Change in Blood Pressure, *M. Clin. North America* 23:1033-1040 (July) 1939.

(b) Sensitivity to Tobacco Smoke, *Queries and Minor Notes, J.A.M.A.* 114:913 (March 9) 1940.

EFFECTS OF THE USE OF TOBACCO ON NATURAL BLOOD SULFO-CYANATES AND BLOOD PRESSURE LEVELS

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RALEIGH

In the original report of the "Correlation Between Blood Pressure and the Concentration of Sulfocyanates in the Blood"⁽¹⁾, based on a study of 244 unselected individuals who had never taken sulfocyanates therapeutically or experimentally, it was demonstrated that average blood sulfocyanate levels vary inversely with the blood pressure levels. Also, it was shown that each such individual

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Read before the Royster Club, Raleigh, June 16, 1948.

1. Caviness, V. S., Bell, T. A. and Satterfield, G. H.: The Correlation Between Blood Pressure and the Concentration of Sulfocyanates in the Blood, *North Carolina M. J.* 2: 385-392 (Nov.) 1941.

21. Johnson, W. M.: Tobacco Smoking: A Clinical Study, *J.A.M.A.* 95:665-667 (Aug. 31) 1929.

has a fixed level of blood sulfocyanate^(1,2) which is constant and does not change materially from week to week. (The average weekly variation for the group was 0.14 mg. per 100 cc. of blood.) It was also reported that "we have not demonstrated any tobacco factor and are of the opinion that any tobacco influence noted in the past may have been due to the tobacco smoke present in saliva. We do not believe it could have any appreciable effect on blood sulfocyanates."⁽¹⁾

Since this first report, the inverse ratio between blood sulfocyanate levels and blood pressure readings has been demonstrated repeatedly. A group in Philadelphia has attempted to prove by a study of 8 selected cases that tobacco influences natural blood sulfocyanate levels⁽³⁾. Although their figures could not justify any controversy over the subject, it appears advisable, since the question has been raised, to publish in some detail data uncovered in our original work on which the conclusions were based. The accumulated material was rather voluminous and it has been considered neither necessary nor expedient to publish all the data on which some of the less important conclusions were based. Additional information is now being offered regarding any possible correlation between the use of tobacco and natural blood sulfocyanate levels.

For various reasons satisfactory information was not secured regarding the use of tobacco in 24 cases. These failures were accidental, and since they were well scattered throughout all groups, the general picture would not be significantly altered if data were available on the additional 24 cases. It appears to be advisable to omit these cases and report only on 220 cases for whom full data are available.

In our work, as previously reported, we have arranged and used the following classification of blood pressure groups^(1,2).

Below 106 systolic.....	hypotension
106 - 130 systolic.....	normal pressure
131 - 140 systolic.....	border line
141 and above systolic.....	hypertension

Diastolic pressure should be approximately two thirds of systolic pressure in the normal pressure group. No diastolic pressure above 85 is considered normal.

Much of the earlier work with sulfocyanates was done by dentists, and many of their studies were made only on saliva. In some cases, especially among smokers, the salivary sulfocyanate level was found to be higher than among some non-smokers. So far as we have been able to learn, no one has ever been able to establish any evidence that smokers maintain higher blood sulfocyanate levels than non-smokers. Apparently the impression that the use of tobacco raises sulfocyanate levels arose from a small number of determinations made on saliva. It is also probable that the higher levels in smokers resulted from the presence of smoke or particles of tobacco in the saliva. The dental investigators were searching for a cause for tooth decay, but since their studies did not yield any information of value in this field, the studies were abandoned⁽⁴⁾.

A study of hypertensive patients being treated with sulfocyanates in Rex Hospital Cardiovascular Clinic showed that, with a few significant exceptions, there was a characteristic drop in systolic and diastolic pressures as the sulfocyanate level rose. When treatment was stopped, there was a gradual rise in the systolic and diastolic pressures, accompanied by a fall in blood sulfocyanate levels, until the levels of blood pressure and blood sulfocyanate that prevailed before treatment was begun were re-established. Subsequent periods of treatment and rest from treatment gave the same results. So striking and constant were these changes that a study was undertaken to determine whether any correlation existed between natural blood sulfocyanate levels and blood pressure levels. The possibility of some correlation between the use of tobacco and natural blood sulfocyanate levels was studied at the same time with the same subjects.

It was apparent that subjects were needed for this study who would represent a good cross section of ages, blood pressure, physical health and sex, and still be kept in comparable environments. It appeared to be important that all subjects be kept under definite control with regard to physical activity, rest, diet, and the use of tobacco. These precautions were prompted by the knowledge that sulfocyanates are end products of protein metabolism.

2. Caviness, V. S., Umphlett, T. L. and Royster, C. L.: Blood Pressure and Sulfocyanates. *Am. J. M. Sc.* 204:688-697 (Nov.) 1942.

3. Trasoff, A. and Schneeberg, N. G.: The Naturally Occurring Blood Sulfocyanates and Their Relation to Blood Pressure. *Am. J. M. Sc.* 207:63-67 (Jan.) 1944.

4. (a) Pauli: Sulfocyanides. *München Med. Wchenschr.* No. 1, 1903.

(b) Sollmann, T. H.: *Manual of Pharmacology, Its Application to Therapeutics and Toxicology*, ed. 3. Philadelphia, W. B. Saunders Co., 1926, p. 909.

Two such groups were studied. Samples of blood from all persons admitted to two state institutions were collected the second morning after admission, before breakfast and before any tobacco was used. On admission, all subjects were at rest for observation, and in both institutions the diet was ordinarily the same for each subject. Apparently we had as close a control over the environment, diet, and activities of the subjects as was possible.

At the State Prison, the diet contained an average of 145 Gm. of protein, 185 Gm. of fat, and 575 Gm. of carbohydrate, with an estimated average daily intake of about 4500 calories. This is probably within average limits for laborers. At Dix Hill (Mental Hospital) the diet contained an average of 131 Gm. of protein, 81 Gm. of fat, and 309 Gm. of carbohydrate, giving an average daily intake of 2900 calories.

The results of this study, as previously published⁽¹⁾, showed a range of natural blood sulfocyanate levels from 0.31 mg. to 2.55 mg., and by blood pressure groups showed an inverse ratio between the blood sulfocyanate levels and the blood pressure levels. All individuals who showed a definite elevation of blood pressure also presented a low blood sulfocyanate level. A number of subjects who had lower blood sulfocyanate levels were individuals who had been at least semi-starved. This was particularly true among new admissions to the mental hospital. The average blood sulfocyanate level for the group with normal pressures was 1.2 mg. We have previously commented on the need for a quantitative method of determining pressor substances in blood. Studies made only on depressor substances can show only one side of the picture, and as a consequence satisfactorily comprehensive analyses can not be obtained. The correlation between pressor and depressor substances is needed.

With respect to the use of tobacco, the 220 subjects for whom we had full data were distributed among all groups in both institutions. As would be expected, subjects who presented hypotension were definitely in the minority. The largest group was made up of 109 subjects with normal pressure, of whom 89 used tobacco and 20 did not. The next largest group, the hypertension group, contained 64 subjects, of whom 49 used tobacco and 15 did not. There were 30 individuals in the borderline group, of whom 22

used tobacco and 8 did not. The hypotension group contained 17 subjects, of whom 12 used tobacco and 5 did not. These figures (table 1) rather closely parallel the distribution in the population at large of blood pressure groups and of users and non-users of tobacco.

Table 1
Users and Non-Users of Tobacco by Blood Pressure Groups

	Prison			Dix Hill		
	Tobacco	No Tobacco	Total	Tobacco	No Tobacco	Total
Hypotension	6	2	8	6	3	9
Normal Pressure	62	14	76	27	6	33
Border Line	13	5	18	9	3	12
Hypertension	22	6	28	27	9	36

The details in this study showing the blood sulfocyanate levels have previously been published⁽¹⁾. In this study it appears to be adequate to use only summaries of the voluminous figures previously published.

It is interesting to note that, of the 26 subjects who showed a blood sulfocyanate level above 1.70 mg., 25 used tobacco and only 1, with a sulfocyanate level of 1.95, was an abstainer. Of the subjects whose sulfocyanate level was below 1 mg., 70 used tobacco and 34 did not. The group with a blood sulfocyanate level below 0.75 mg. contained 49 tobacco users and 17 non-users. Among those who had a sulfocyanate level of 0.40 mg. or less, 10 used tobacco and only 1 was an abstainer. The abstainer was one of five who had the minimum level of 0.31 mg. The other four used tobacco.

It will be observed that 25 of 26 individuals who showed the higher sulfocyanate concentrations, regardless of pressure levels, used tobacco. Also, all except one in the minimum level group used tobacco. Obviously there is no pattern of any statistical significance to be found here.

Gertrude M. Cox, Head of the Department of Experimental Statistics, State College. Raleigh, gave this opinion:

"The analysis of these KSCN values for the tobacco users as compared to the non-users shows no effect of the use of tobacco on KSCN values. In fact there is more variation between the KSCN values of non-users than there is between the users as compared to non-users. In other words, there is no evidence in these data that KSCN values are related to the use of tobacco.

"Also, the study made on the number of

tobacco users in the four groups—hypotension, normal, border-line and hypertension—shows that in this sample there is no evidence of the percentage of tobacco users differing from one group to another. However, this result is somewhat obviated by the small numbers of non-tobacco users."

Conclusions

Carefully controlled studies of 220 unselected subjects who represented a satisfactory variation in age, sex, and health failed to show any significant statistical indication of any relation between blood sulfocyanate and blood pressure levels and the use or non-use of tobacco.

OBSERVATIONS ON THE USE OF VINBARBITAL SODIUM IN OBSTETRICS

JOHN C. BURWELL, JR., M.D.

GREENSBORO

Previous reports on the use of vinbarbital sodium in obstetrics have been based on observations made in service cases. For this reason, it was felt that a study on the use of the drug in private obstetric patients would be of interest.

Methods and Material

In July, 1946, I began to use vinbarbital sodium⁽¹⁾ on alternate cases (group 1) in my private obstetric practice, without regard to age, parity, or stage of labor. The drug was not used on patients with heart disease nor on those with breech presentations, purely because any accidents occurring in such cases would be attributed by the patient to "experimentation with a new drug." Dosages were not standardized, but were varied according to clinical indications such as the condition and dilatation of the cervix, the interval and duration of uterine contractions, and the patient's parity and weight. The smallest total dose was 6 grains and the largest 23; the average was about 16 grains. The general procedure was to administer 6 grains orally in combination with 1/150 grain of scopolamine as soon as labor was definitely established, and to supplement this initial dose when necessary for analgesia during the first stage of labor. Ten to 12

grains were administered intravenously for anesthesia as the first stage neared completion, or even at the beginning of the second stage.

Most of the alternate cases (group 2) received Demerol in combination with scopolamine as an analgesic, and all alternate cases received ether, nitrous oxide, or both as an anesthetic.

Between July, 1946 and August, 1947, a total of 266 cases were studied. Of these, 131 or 49 per cent received vinbarbital sodium, and 135 or 51 per cent received other agents. There were 81 primiparas and 50 multiparas in the first group, 88 primiparas and 47 multiparas in the second group. Eleven patients, or 4.1 per cent, had breech deliveries. Ages varied from 17 to 44 and averaged 26 for both groups.

Results

Analgesia and amnesia

In all cases vinbarbital provided complete analgesia, and in most cases was also sufficient for anesthesia. The patients receiving it had no recollection of any procedures carried out following the intravenous administration until consciousness slowly returned ten to twelve hours later. The majority expressed disbelief when informed that their baby was already several hours old. In those few cases for which supplemental anesthesia was required, gas-oxygen-ether, or simple open ether anesthesia was added without difficulty for either mother or infant. These agents were rarely necessary except for the subcuticular portion of the episiotomy repair.

Length of labor and necessity for operative procedures

The average length of labor for the first group was nine hours and twelve minutes; for the second group, eight hours and eighteen minutes. This slight difference in so small a series was not felt to be significant. There were 90 low forceps deliveries and 83 episiotomies in the first group, 91 low forceps deliveries and 67 episiotomies in the second group. Three mid-forceps deliveries were performed in each group.

Blood loss

No facilities for accurate measurement of blood loss were available, but the total loss for each patient was estimated as being small, moderate, or excessive. In the group

¹From the Sternberger and St. Leo's Hospitals, Greensboro, North Carolina.

1. Made available through the courtesy of Sharp & Doime under the trade name, Delvinal Sodium.

which received vinbarbital, 10 patients had a blood loss which was classified as moderate. In the other group, 11 lost a moderate amount of blood, and 2 an excessive quantity.

Morbidity

The incidence of morbidity in the first group was 6.1 per cent (8 patients). Two of these patients had mastitis, one a virus pneumonia beginning on the seventh postpartum day, and the other five low-grade endometritis. The morbidity for the second group was 4.4 per cent (6 cases)—1 case of mastitis and 5 cases of low-grade endometritis.

Fetal mortality

Death of the fetus occurred in 8 cases—an over-all fetal mortality of 3.0 per cent. The corrected mortality was 1.5 per cent. There were 2 deaths in the first group—one a 7 pound, 4 ounce male monstrosity with absence of the abdominal viscera, who died one hour and forty-five minutes after birth, and the other a stillborn macerated female. In the latter case fetal movements had stopped three days prior to delivery, and no fetal heart could be heard during labor.

Six deaths occurred in the alternate series. Two premature infants—both of thirty weeks gestation—died one to four hours following delivery. One full term male died during a thirty-hour labor in which delivery was effected by version and breech extraction. The fetal heart sounds were lost three hours prior to delivery, and autopsy findings were non-contributory. The fourth case was that of a stillborn 6 pound, 12 ounce male (breech presentation), in which the fetal heart was lost one hour prior to the beginning of the second stage of labor. Autopsy findings were again non-contributory. In the fifth case—another stillborn baby, whose heart sounds were lost two hours prior to the end of the first stage—the placenta showed evidences of premature separation and the autopsy showed bloody fluid in both alveoli and bronchi. The sixth baby, a 7 pound, 3 ounce male, attempted inspiration spontaneously, but expired after four and one-half hours despite attempts at resuscitation by both a pediatrician and an otolaryngologist. The only analgesia or anesthesia had been gas, oxygen, and ether for the second stage. Autopsy showed amniotic fluid in bronchi and alveoli.

Comparison of Vinbarbital Sodium with Other Analgesic Agents in 266 Private Obstetric Cases

	Group 1 Vinbarbital Sodium	Group 2 Other Agents
Total no. of cases.....	131 (49%)	135 (51%)
Primiparas	81	88
Multiparas	50	47
Average age	26	26
Average length of labor.....	9' 12"	8' 18"
Low forceps	90	91
Mid forceps	3	3
Episiotomy	83	67
Moderate blood loss.....	10	11
Excessive blood loss.....	—	2
Morbidity	8 (6.1%)	6 (4.4%)
Fetal mortality	2 (1.5%)	6 (4.4%)
Corrected fetal mortality....	—	4 (3.0%)

In none of these fetal deaths was it felt that either analgesic or anesthetic agents were a factor.

Effect on infant

In the first group four infants required moderate resuscitation measures, and one required measures which were considered drastic. In the second group, five infants required moderate resuscitation and two required more drastic measures. It was not felt that the incidence of cases in which resuscitation was necessary was higher than the general average following any anesthetic or analgesic agent.

Complications

Restlessness during the recovery period was noted in 15 per cent of the patients in the first group. Blurred vision was noted in approximately the same percentage of cases, but was not unpleasant. Those patients who were questioned expressed a desire for the same medication with future deliveries.

The only near serious consequences of vinbarbital sodium occurred in 2 patients who, during the recovery period, attempted ambulation in a semi-conscious state. Both fell to the floor, but fortunately received no injuries, probably because of the complete relaxation occasioned by the drug.

Summary

In a series of 266 private obstetric cases, alternate patients received vinbarbital sodium. When compared with other analgesic or anesthetic agents which were administered to the remaining patients, vinbarbital was found to give more complete amnesia with a comparable safety factor from both maternal and fetal standpoints. Neither length of labor nor the incidence of operative deliveries was increased significantly by vinbarbital sodium. Morbidity and blood

loss were unaffected. The patients receiving vinbarbital sodium expressed a desire for the same medication with future deliveries.

My findings are in complete agreement with those of Dr. Lewis and his co-workers⁽²⁾ regarding the safety of the drug from both maternal and fetal standpoints, the relief of pain afforded, and the absence of complications.

Conclusions

1. Vinbarbital sodium is a valuable addition to our obstetric armamentarium.

2. The drug is suitable for almost all types of patients, provided that constant observation is provided during the recovery period.

3. It offers the obstetrician an excellent agent for the safe and immediate relief of pain in cases of active, rapidly progressing labor, where the action of other drugs is frequently too slow.

2. Lewis, M. S.: Vinbarbital Sodium for Obstetric Amnesia, Analgesia, and Anesthesia. *Am. J. Obst. & Gynec.* 51:395-402 (March) 1946.

Maternal Welfare Section*

CESAREAN SECTION IN THE HOSPITALS OF NORTH AND SOUTH CAROLINA

Cesarean section is an operation which is widely used to solve obstetric problems. Two previous publications of the Maternal Welfare Committee have been devoted to this subject; one considered the general indications for use of the procedure and reviewed the inherent dangers to the mother and child⁽¹⁾. The other reviewed Williams' series of cases⁽²⁾, and suggested that similar good results could not be expected in the general use of the operation⁽³⁾.

These articles came to the attention of Dr. W. S. Rankin, director of the Duke Endowment. Following is an excerpt from his letter to the Maternal Welfare Committee.

*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

Frank R. Lock, M.D., T. L. Lee, M.D.
Chairman C. O. Moss, M.D.
J. Street Brewer, M.D. C. J. Powell, M.D.
G. M. Cooper, M.D. Ivan Procter, M.D.
E. W. Franklin, M.D. R. A. Ross, M.D.

"Last year I read with sympathetic interest the statement of the Maternal Welfare Committee of the Medical Society of the State of North Carolina on 'The Intelligent Use of Cesarean Section.' Your statement suggested to me at the time that when all hospital reports for 1947 are in, we might tabulate the frequency with which the operation was used and the fatality rates following the operation in the hospitals of the two states. That we have done and I enclose herewith a copy of the tabulation [table 1]. You will note that the hospitals are identified only by numbers, not by names."

Table 1

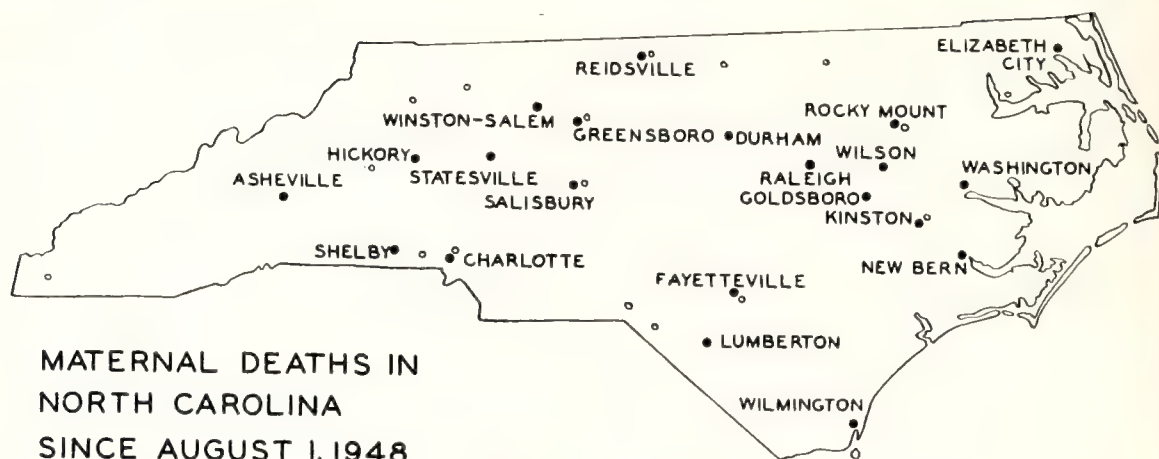
The Duke Endowment 1947 Hospital Statistics Incidence of Deliveries by Cesarean Section in One Hundred and Thirty-Two North and South Carolina General Hospitals, with Mortality Rates

North Carolina					Incidence of Cesarean Section
Total No. Deliveries, Including Stillbirths	Cesarean Sections				
	Number	Deaths	Mortality		
1	19	7			36.8%
2	118	22	2	9.1%	18.6%
3	184	24			13.0%
4	93	11			11.8%
5	913	83	3	3.6%	9.1%
6	354	30			8.5%
7	625	51			8.2%
8	337	25			7.4%
9	165	12			7.3%
10	442	29			6.6%
11	1,657	109			6.6%
12	468	28			6.0%
13	698	42			6.0%
14	121	7			5.8%
15	356	19			5.3%
16	680	35			5.1%
17	777	40			5.1%
18	612	30	1	3.3%	4.9%
19	427	20			4.7%
20	1,177	54			4.6%
21	731	33			4.5%
22	1,233	56			4.5%
23	1,288	56	1	1.8%	4.3%
24	255	11			4.3%
25	163	7			4.3%
26	776	33			4.3%
27	168	7			4.2%
28	844	35			4.1%
29	1,685	69			4.1%
30	487	20	1	5.0%	4.1%
31	1,096	44	1	2.3%	4.0%
32	568	23			4.0%
33	503	20	1	5.0%	4.0%
34	682	26	1	3.8%	3.8%
35	566	21	1	4.8%	3.7%
36	837	31			3.7%
37	1,073	40			3.7%
38	173	6			3.5%
39	1,439	51			3.5%
40	1,206	41	2	4.9%	3.4%
41	728	25	1	4.0%	3.4%
42	560	19	2	10.5%	3.4%
43	669	23	1	4.3%	3.4%
44	749	25			3.3%
45	1,118	36			3.2%
46	717	22	1	4.5%	3.1%
47	540	17			3.1%
48	469	14			3.0%
49	766	22	1	4.5%	2.9%
50	377	11			2.9%

1. Cesarean Section, Maternal Welfare Section, North Carolina M. J. 7:622-624 (Nov.) 1946.

2. Williams, J. T.: Cesarean Section in the Interest of the Mother, North Carolina M. J. 9:137-141 (March) 1948.

3. The Intelligent Use of Cesarean Section, Maternal Welfare Section, North Carolina M. J. 9:205-206 (April) 1948.



MATERNAL DEATHS IN NORTH CAROLINA SINCE AUGUST 1, 1948

	Total No. Deliveries, Including Stillbirths	Cesarean Sections			Incidence of Cesarean Section		Total No. Deliveries, Including Stillbirths	Cesarean Sections			Incidence of Cesarean Section
		Number	Deaths	Mortality				Number	Deaths	Mortality	
51	907	25	1	4.0%	2.8%		6	704	59		8.4%
52	2,708	72			2.7%		7	341	28	1	8.2%
53	1,810	46	1	2.2%	2.5%		8	646	53		8.2%
54	1,614	38			2.4%		9	326	26	1	8.0%
55	779	17			2.2%		10	423	32		7.6%
56	646	14			2.2%		11	706	49	1	6.9%
57	243	5			2.1%		12	413	26		6.3%
58	543	11			2.0%		13	1,113	64	1	5.8%
59	329	6			1.8%		14	972	55		5.7%
60	342	6			1.8%		15	1,502	84	1	5.6%
61	670	12			1.8%		16	477	26		5.5%
62	641	11			1.7%		17	222	12		5.4%
63	621	10			1.6%		18	365	19		5.2%
64	189	3			1.6%		19	2,286	97	1	4.2%
65	1,265	19	1	5.3%	1.5%		20	564	22		3.9%
66	494	7	1	14.3%	1.4%		21	579	22		3.8%
67	1,471	21			1.4%		22	638	24	2	3.8%
68	861	11			1.3%		23	1,510	52	1	3.4%
69	272	3			1.1%		24	1,407	43		3.1%
70	1,073	12			1.1%		25	2,331	65		2.8%
71	1,983	21			1.1%		26	295	8		2.7%
72	561	6			1.1%		27	607	16	1	2.6%
73	391	4			1.0%		28	293	7		2.4%
74	1,149	11			1.0%		29	176	4		2.3%
75	639	6			.9%		30	1,099	22	1	2.0%
76	482	4			.8%		31	54	1		1.9%
77	708	5			.7%		32	112	2		1.8%
78	1,618	12	1	8.3%	.7%		33	1,269	17		1.3%
79	989	6			.6%		34	170	2		1.2%
80	483	3			.6%		35	815	10		1.2%
81	157	1			.6%		36	614	7		1.1%
82	481	3			.6%		37	1,217	12		1.0%
83	200	1			.5%		38	561	5		.9%
84	774	4			.5%		39	461	3		.7%
85	485	2			.4%		40	716	5		.7%
86	529	2			.4%		41	248	1		.4%
87	312	1			.3%		Total	28,234	1,239	12	1.0%
88	101						Total both				
89	167						states	90,880	3,202	37	1.2%
90	270										3.5%
91	0										
Total	62,646	1,963	25	1.3%	3.1%						

South Carolina

1	39	7	1	14.3%	17.9%
2	926	146			15.8%
3	140	22			15.7%
4	761	72			9.5%
5	136	12			8.8%

Table 2
Causes of Death

	Number of Cases	
	Direct Cause	Contributing Cause
Toxemia of pregnancy	12	4
Infection	3	1
Hemorrhage	2	1
Anesthetic	4	2
Cardiac disease	4	2

In North Carolina during 1947 there were 109,372 live births, with 187 maternal deaths—a mortality of 0.17 per cent⁽⁴⁾. Cesarean sections were performed in 1963 cases, or 1.8 per cent of all deliveries. Three and one tenth per cent of all *hospital* deliveries in North Carolina are by the abdominal route.

The maternal death rate following this operation has vastly improved in recent years. However, 25 mothers died following cesarean section in North Carolina during 1947—a mortality of 1.3 per cent. Fifteen of the deaths occurred within twenty-four hours after the operation.

The Maternal Welfare Committee has reviewed the clinical records of the 25 mothers who died following cesarean section. There was an error in the medical management of 24 of the 25 cases. In the majority, more than one cause was responsible for the patient's death (table 2). In a cardiac patient, for example, the anesthetic and shock of the operation may be a greater factor in the patient's death than the primary heart condition.

It is clear from a study of the records that cesarean section was not the best method of delivery for 21 of the patients. An unsatisfactory consultation, or none, was obtained in these 21 cases. In 2 of the 4 cases in which a satisfactory indication was present, the operation was used in an attempt to save the child when the mother's condition was hopeless.

Although toxemia of pregnancy was the direct cause of death in 12 cases, 11 of the patients probably would have survived on standard conservative management followed by vaginal delivery. Three additional patients with hypertension died suddenly, immediately following the administration of a spinal anesthetic.

A fourth sudden death followed administration of a spinal anesthetic to a normal woman for an elective operation. Sodium pentothal anesthesia was a contributing factor in the deaths of 2 patients with cardiac disease. They probably would have lived if they had received the benefit of longer periods of conservative treatment and a vaginal delivery with local or ether-and-oxygen anesthesia.

Blood was not immediately available for

the patients who died of hemorrhage. Although one of them received two transfusions, she was in poor condition for an operation. Earlier transfusion with larger quantities of blood could have saved her life.

In the final analysis by the Maternal Welfare Committee, 24 of the 25 deaths following cesarean section were considered to be preventable. The large number of successful operations recorded in table 1 is a tribute to the skill of the surgeons and obstetricians in the two Carolinas. The record can be improved by skillful administration of the proper anesthetic, by the provision and use of laboratory and blood bank facilities, and by careful selection and preparation of the patient.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*
DURHAM

X

SURGERY OF THE HEART AND PERICARDIUM

"The road to the heart is only 2 or 3 cm. in a direct line, but it has taken surgery nearly 2400 years to travel it." Sherman's words following the first successful suture of a human heart wound by Rehn in 1896 portray the struggle of the early surgeons in this field.

Like many other branches of surgery, cardiac surgery began in the field of trauma. The attention of the early physicians was directed to the heart chiefly because of wounds, which until quite recent times were regarded as being necessarily fatal. The teaching of Hippocrates that a "wound of the bladder, brain, heart, diaphragm, small intestine, stomach and liver is deadly" was accepted, and the peculiar sensitiveness of the heart was emphasized by Aristotle, Celsus, and Galen and asserted again later by such writers as Fallopius, Fabricius, Bar-bette and Boerhaave. These teachings were carried through the centuries, to be repeated as recently as the latter part of the nineteenth century in the words of Billroth ("The surgeon who would attempt to suture a wound of the heart would lose the respect of his colleagues") and in the thoughts of Paget ("No new method or no new discovery

4. Infant and Maternal Deaths, with Rates per 1000 Live Births, Health Bull. (N. C. State Board of Health, Raleigh) 63:16 (May) 1948.

can overcome the natural difficulties that attend a wound of the heart").

During these same centuries, however, there were dissenters, and it is to their continued efforts that cardiac surgery owes its advance. The sixteenth century heard Hollerius question the verity of the generally accepted belief that all cardiac wounds were fatal. Cabriolanus followed up with 2 cases of an unhealed wound and a scar respectively in the hearts of two individuals who were hanged, and maintained that death need not follow a cardiac injury. In 1642 Idonis Wolf observed a healed heart wound in a deer, and in the same year Tourby observed a cicatrix in the heart of a man who had had a sword wound four years before his death.

During the following century attention was focused on the presence of blood in the pericardial sac, and Bonetus and Morgagni observed that pressure on the heart exerted by the blood in the pericardium could cause cardiac arrest. Riolanus had long before (1650) suggested sternal trephining for aspiration of the pericardial sac, but it was not until 1828 that Larrey, Napoleon's surgeon, reported the first successful aspiration. He likewise showed experimentally that in dogs cardiac wounds were not necessarily fatal. From then until the eighteen-nineties pericardiocentesis was the principal subject of discussion and experimentation. Jowett of Nottingham showed that a trocar could be used for entering the sac, and in 1847 Kyber of St. Petersburg recorded a number of paracenteses performed during an epidemic of pericarditis associated with scurvy. During the next twenty years many new advocates of the procedure published their reports. By 1870 the method was in routine use, and a number of sites for puncture were proposed. At the same time it was gradually appreciated that paracentesis had definite dangers and did not empty the pericardium, and the argument raged regarding the respective merits of aspiration and incision.

Although the first ninety years of the nineteenth century were important from the standpoint of the development of pericardiocentesis, the stage was also being readied for the actual attack on the heart. George Fischer, in 1868, published his epoch-making compilation of 452 cases of heart injuries, including a considerable number of spontaneous recoveries. In 1871 Callender successfully removed a needle from the heart.

In 1881 Roberts suggested that cardiac wounds should be treated by suture. This operation was performed on rabbits in 1882 by Block. Then, in 1895, Del Vecchio demonstrated, before the Eleventh International Medical Congress in Rome, a healed wound in the heart of a dog. The operation was performed on human patients during the following year not once, but on three occasions. Cappelen, of Christiania, in the latter part of 1895 operated on the human heart, and early in the next year (March, 1896) Farina, of Rome, also sutured a dagger wound. Both patients died, but Farina's case lived until the eighth day and the wound was shown to be healed. In September of the same year Rehn of Frankfurt finally achieved the successful suture of a heart wound, and demonstrated the result before the German Surgical Society in Berlin seven months later. Cardiac surgery had at last begun, and the masters had to bow to the few who refused to believe that it could not be done.

Suturing of the heart, then, was the turning point in the history of cardiac surgery. It terminated the long era of argument and theory over cardiac wounds, and opened the door to a new era of cardiac surgery and experimentation.

The advance of cardiac surgery since Rehn's first successful case has been truly remarkable. In 1895 Weil had proposed that the pericardium should be removed in cases of constrictive pericarditis. In 1898 Brentano, Samways and, later, Brunton, suggested that surgical intervention might be employed for valvular lesions, especially mitral stenosis. Franck, as early as 1899, proposed section of the sympathetic nerves for the relief of pain in cases of angina pectoris. In 1902 Brauer recommended the removal of part of the anterior chest wall for the relief of mediastino-pericarditis, and this was performed by Peterson. By 1907 Morison suggested and had carried out a "decompression" of the heart. The following year Trendelenburg elaborated his operation for pulmonary embolism, though without a successful result. During this time, also, the efficacy of procedures such as cardiac massage had been demonstrated; Lane's work in 1903 on this phase of surgery was outstanding.

During the first part of the twentieth century, there were several important advances in anesthesia which were to facilitate greatly the progress of cardiac surgery. Chief among these was the evolution of endotracheal in-

sufflation in 1909 by Meltzer and Auer, a technique applied later to clinical anesthesia by Elsberg. This, plus the developments in thoracic surgery during the first thirty years, made possible the rapid advancement in cardiac surgery.

The second decade of the twentieth century saw Rehn and Sauerbruch performing decortication for constrictive pericarditis in 1913. Valvular stenoses were also treated by Doyen (1913), Tuffier (1914), and Cutler (1923), with varying degrees of success. In 1916 Jonnesco began the treatment of angina pectoris by sympathectomy. In 1924 Kirschner successfully performed an embolectomy on a case of embolism of the pulmonary artery, and more recently other cases have been dealt with in a similar manner.

Since 1920, most of the outstanding work in cardiac surgery has been limited to three fields: valvular disease, coronary disease, and traumatic surgery. Progress in valvular lesions has possibly been the slowest of the three, although the efforts of Cutler, Smithy, and others foretell of miracles to come. If a method can be developed for sidetracking the blood flow during operation, progress in this field will certainly plunge ahead of all the rest.

The studies in coronary occlusion have led to three general subdivisions of surgical therapy: (1) interruption of nervous pathways, (2) introduction of extracardiac collateral vessels, and (2) ligation of the great cardiac vein. Jonnesco's work with cervical sympathectomy has already been mentioned. It was soon learned that the cervical sympathetic connections with the spinal cord are by way of the upper thoracic ganglia, and therefore Leriche proposed stellate gangliectomy in place of cervical sympathectomy. Then in 1927 it was discovered that the cardiac plexuses are directly connected with the upper four or five thoracic sympathetic ganglia by thoracic cardiac nerves. Mandl and White showed that alcohol injection or resection of these ganglia effectively relieved anginal pain. The same results were obtained with posterior rhizotomy (Singer) and later with anterior rhizotomy (Raney). Cone modified the latter procedure even further by sectioning the posterior roots. Another form of interruption of nervous pathways has been favoured by Fauteux—namely, a pericoronary neurectomy. The plexus, including sympathetic and vagus fibers, is

destroyed at the root of the aorta and pulmonary artery. All of these operations are still being performed, and time alone will determine the most efficacious method.

The earliest experimental work aimed at establishing an extraneous collateral blood supply in coronary disease was that of Beck in 1932. He made use of fibrous pericardium, pericardial fat, omentum, and skeletal muscle from the chest wall as grafts to supply new vessels. O'Shaughnessy duplicated this work independently, using omental grafts. Later Beck scarified the parietal pericardium with asbestos powder and powdered talc. Although there has been considerable criticism of the method, the long-term results in these cases of induced pericarditis are awaited with considerable interest.

An entirely different approach to the problem of improving the myocardial circulation has been developed by Fauteux. Basing his approach on Oppel's demonstration in 1913 that venous ligation in a limb is a valuable procedure in dealing with arterial disease or injury, and Gross's observation that occlusion of the coronary sinus appears to compensate in some way for later ligation of a coronary artery, Fauteux has ligated the great cardiac vein in the human patient suffering from localized coronary ischemia. As with the nerve operations, the results of this form of attack on coronary disease should prove most interesting.

Progress in the field of traumatic cardiac surgery was delayed until the second World War, although Elkin had done considerable work on the subject previously. The experiences of Harken and his associates during the last war, in connection with foreign bodies in and close to the thoracic blood vessels and heart, are particularly worthy of review, since they deal with practical aspects of intracardiac surgery. In view of Harken's reports, surgery has advanced a long way since Rehn's first cardiac suture only fifty years ago.

Although the heart has been one of the last organs in the body to be attacked surgically, progress in this field has been exceptional. When the second milestone (a method of sidetracking the blood flow during intracardiac operations) has been reached, the future of cardiac surgery will certainly be unlimited.

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THE NATION'S HEALTH

"THE NATION'S HEALTH" is an elaborate book of 186 pages which contains Mr. Oscar Ewing's report to the President on the ten-year health program.

It may be recalled that there was considerable skepticism concerning the motives of Mr. Ewing and his associates in calling the National Health Assembly last May. Many who fear federal control of the practice of medicine remembered a similar conference held in the early days of the New Deal, which furnished propaganda for the proponents of the Wagner-Murray-Dingell type of legislation. When, however, Mr. Ewing's Assembly adjourned without having recommended compulsory insurance, even so astute a student of human nature and of medical affairs as the editor of the *Journal of the American Medical Association* was lulled into stating

editorially that "the subsequent developments and the final action taken have resolved the doubts and anxieties . . . While there are still knotty problems not yet unraveled . . . the nation seemed to be on the way toward the development of a plan for the production and distribution of medical services suitable to the American democracy."⁽¹⁾

Unfortunately Mr. Ewing's report to the President justifies the suspicion that the Assembly was intended only as a source of propaganda for those who would force federally controlled medicine on this country. For example, in the section entitled "Voluntary or Government Insurance," Mr. Ewing says that "Many, though not all, representatives of labor and other consumer groups were strong spokesmen for a Government plan. Many, but not all, representatives of medical groups believed that voluntary insurance was the only acceptable solution."⁽²⁾ Mr. Ewing, therefore, "reexamined this entire issue as objectively as possible" and is "forced to the conclusion that the voluntary insurance plans can never do the job that the national interest requires to be done."⁽³⁾

In other words, "Papa knows best."

The whole book is devoted to a rehash of the old, familiar arguments for compulsory health insurance under federal supervision. The now thoroughly discredited Selective Service figures ("5,000,000 men declared unfit physically or mentally") are taken out of mothballs. This intellectual dishonesty is in itself enough to discredit the rest of the report. It is not necessary to review all the shopworn arguments for a socialistic system of medicine, but it may be pertinent to offer a few comments on the report as a whole.

As Dr. Marjorie Shearon says,

"It is ludicrous for an out-and-out politician like Ewing to publish a report on the Nation's health. Such a report should emanate from the Surgeon General of the USPHS. This is exactly the sort of thing that former Commissioner of Education Studebaker complained of when he resigned. Here is a document politically conceived, politically engineered, and politically timed. Can one doubt it is intended to help put Ewing on the map and to publicize the

1. The National Health Assembly, Editorial, J.A.M.A. 137: 116-117 (May 8) 1948.
2. The Nation's Health: a Ten Year Program. A Report to the President by Oscar R. Ewing. Federal Security Administrator, Washington, Federal Security Agency, 1948, p. 75.
3. The Nation's Health(2), p. 88.

President's legislative program? Ewing has endeavored to make himself and his top administrative assistants spokesmen in the highly technical fields of health and medicine. Does a report on health require tinkering by professionally unqualified persons?"⁽⁴⁾

Particularly insidious is the danger inherent in Mr. Ewing's proposal to divert federal funds to the medical schools and hospitals of the country. Since many of our schools and hospitals are owned and maintained by various religious denominations, the acceptance of such funds would constitute a violation of the fundamental doctrine concerning the separation of church and state. Furthermore, even non-denominational medical schools and hospitals should hesitate long before giving the politicians in Washington such a golden opportunity to control their policies.

Another insidious scheme is the proposal to train 2,800 "health educators"—one "for every 50,000 population." To quote Dr. Shearon again:

"Theoretically such an educator helps people to acquire knowledge concerning health and its attainment.

"Actually, under the training program of the Public Health Service, such educators receive an unfortunate indoctrination in the philosophy of State medicine. Perhaps they are sent to Ann Arbor to be indoctrinated by Nathan Sinai. Or they may go to the University of North Carolina to hear Dr. Lucy Morgan, daughter of TVA Morgan, expatiate on the wonders of Social Security medicine . . .

"Grants for such training are now being made through the Kellogg Foundation and through the State health departments. Mayhew Derryberry, Ph.D., formerly on Perrott's staff and now on Mountin's staff, is chief of the Office of Health Education, USPHS. He works closely with Lucy Morgan. Derryberry was the prime mover in the Health Workshops exposed by the Harness Subcommittee last year. The Government could not devise a more useful scheme for developing a great army of evangelists for nationalization than by training so-called health educators. They work at the grass-roots."⁽⁴⁾

One final thought is that it seems somewhat presumptuous for Messrs. Ewing and Truman to propose a "ten-year program" just on the eve of a national election, after which it is quite possible that both of them will be seeking employment elsewhere.

DR. JAMES KING HALL

Although Dr. James K. Hall, who died on September 10, spent most of his professional life in Virginia, he never lost his love for his native state of North Carolina. He was one of six honorary members of its State Medical Society, and seldom missed an annual session. He was on the staff of the State Hospital in Morganton from 1905 until 1911, when he and two associates founded the Westbrook Sanatorium in Richmond. He was president of this institution until his death.

In 1912 he married Miss Laura Ervin, who, with three sons, survive him. They brought his body back to be buried in the Morganton cemetery on Sunday, September 12.

During his life many honors came to Dr. Hall, unsought, as a tribute to his professional and personal ability. He was at various times president of the Richmond Academy of Medicine, vice president of the Medical Society of Virginia, chairman of the Governor's Advisory Board on Mental Hygiene, president of the National Association of Private Psychiatric Hospitals, president of the Southern Psychiatric Association, and president of the American Psychiatric Association. In 1935 his alma mater, the University of North Carolina, bestowed upon him the honorary degree of LL.D.

Many years ago Hanford Henderson wrote a remarkable essay called "The Aristocratic Spirit." Had he known Dr. Hall as an intimate friend, it would be easy to believe that in this essay Mr. Henderson was using him as his model of the true aristocrat. For example, "The aristocrat . . . must love excellence . . . disinterestedly . . . Greed, arrogance, snobbishnesses, cruelty can never be the qualities of an aristocrat, for the excellence which he seeks in the great outer world, he seeks still more passionately in himself . . . He repudiates with vigor all class consciousness . . . is an uncompromising individualist, and so opposes the major currents of the hour."

No better epitaph for Dr. Hall could be found than a few sentences from a letter written by one of his most intimate friends: "He was a great man, a great friend of man, and a devoted loyal friend to those he loved, and he was a great and devoted psychiatrist. We shall all miss him very much. His remains were interred here in the town ceme-

4. American Medicine and the Political Scene, published by the Shearon Medical Legislative Service, Washington, v. 2, no. 29 (Sept. 10) 1948.

tery and I have been up several times to speak to him, but I find his spirit is not there."

* * * *

THE POLIO PROBLEM SOLVED

The August issue of this journal contained an article on poliomyelitis by Dr. William F. Friedewald, associate professor of medicine at Emory University, and an editorial reprinting a summary of the current conception of the disease which had been prepared by Dr. Charles P. Stevick, state epidemiologist. Both these authorities admitted that there were still some gaps in our knowledge of the disease.

Thanks to the rapid progress of science, the JOURNAL is able this month to present an authoritative exposition of the etiology and treatment of poliomyelitis. In the *Twin City Sentinel* for September 4, a two-column advertisement by Dr. Floyd Strupe, chiropractor, explains the real etiology of this dread disease. By his own admission, Dr. Strupe's statement is based on exhaustive research.

"The chiropractor has proved in thousands of cases, and is daily adding to this proof, that anterior-polio-myelitis is the result in most instances, of a pinch on the anterior portion of the spinal cord or of pressure on motor nerves where they make their exit from between the joints of the spine. The pinch results from twisted spinal joints caused by falls and other accidents to which children are constantly subjected.

"The reason for the greater incidence of this disease in the Spring, Summer and Fall, is the call of the outdoors with its inducements for tree climbing, bicycle riding, wrestling, diving, leap frog, and other games through which spinal injuries originate. The low incidence of polio in the Winter is the result of youngsters being cooped up in schools and in their homes most of the time. Fear of chastisement often prevents children revealing their falls and other accidents to their parents."

How gratifying it is to have such a simple explanation for the seasonal variation of the disease! It is true that in cold weather quite a few youngsters subject their spines to considerable strain on the football gridirons and basketball courts of the nation. Wrestling is not limited to the summer months, either. It may be, however, that the thicker trousers worn in the winter serve to mitigate the fear of chastisement, so that injuries are more readily confessed to and more quickly corrected by chiropractic adjustment.

Fortunately, the cure of polio is as simple as the explanation of its cause.

"If the causative spinal injuries are corrected within a few days after polio sets in, the great majority of cases will respond immediately. And, even most chronic cases respond to such treatment very satisfactorily in due course of time."

Obviously the sensible thing for a physician to do when he is asked to treat a patient with poliomyelitis is to send for the nearest chiropractor.

* * * *

WILL C. BRAUN

On Sunday, September 12, Will C. Braun died at his home in Chicago. Although he held no medical degree, there are few physicians who have meant more to the medical profession than he did. Fifty-six of the 80 years of his life were devoted to the American Medical Association. From a modest beginning as "subscription solicitor and all-around office helper" in 1891, he became advertising manager of the JOURNAL and business manager of the American Medical Association. He had the remarkable sort of personality that made doing business with him a pleasure, and that literally endeared him to his business friends and colleagues. When he retired in 1946 to be succeeded by his first assistant, Mr. Thomas R. Gardiner, his friends and associates arranged a banquet in his honor. This occasion will be long remembered by those privileged to be present.

It has been said that institutions are often the lengthened shadows of individuals. More than one individual's shadow is represented in the American Medical Association. Along with Drs. Nathan Smith Davis and George H. Simmons the layman, Will Braun, will be remembered as long as there is an American Medical Association.

* * * *

DR. ROSS McELWEE

One of the most familiar faces at State Society meetings will be missed next year. Dr. Ross McElwee, of Statesville, died on September 8 after several months' illness. Dr. McElwee was one of the most faithful members of the State Society. For some years he represented the Society in the House of Delegates of the American Medical Association. His loyalty to his friends, his genial personality, and his high professional ideals made him one of the most highly respected members of the Society. He will be sadly missed in the years to come.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF
WAKE FOREST COLLEGE

WINSTON-SALEM

A 63-year-old man was admitted to the North Carolina Baptist Hospital on February 22, 1948, with a tentative diagnosis of a lymphomatous process.

His present illness apparently began in the fall of 1946, when he began feeling "run down." Physical examination at that time revealed some lymphadenopathy. A cervical lymph node was removed, and the pathologic report was "probably lymphoma or leukemia." There is some question as to whether or not the patient received x-ray therapy at that time. Little is known of the patient's course from then until January, 1948, when he rapidly developed ascites. The development of ascites was accompanied by dyspnea, weakness, loss of appetite, and reduced urinary output. During a period of about six weeks several abdominal paracenteses were done, and as much as 7 liters of fluid was removed at one time. No description of this fluid is available.

Examination elsewhere showed a red blood cell count of 3,400,000, and a white blood cell count of 23,000, with mononuclear cells predominating in the blood smear. There seemed to be some question as to whether these mononuclear cells were large lymphocytes or myeloblasts, and the consensus at that time was that the patient had chronic lymphatic leukemia. On the basis of this diagnosis he was given x-ray therapy, receiving a total of 1480 r. in air anteriorly over the abdomen and 400 r. in air posteriorly over the abdomen between January 14 and February 12. During the course of x-ray therapy the patient's white cell count dropped from 23,000 to 6,400, but the patient failed to show any clinical improvement.

Although the patient himself gave no history of alcoholism, we are assured that several years ago he was a very heavy drinker; it is not certain whether or not he had been drinking recently. Members of his family stated that his eating habits had been extremely poor; he ate very irregularly and sometimes would miss as many as three or four consecutive meals. The patient had one brother who died of cancer.

Physical examination upon admission to this hospital showed a few firm, shotty lymph nodes in the posterior cervical region, in both axillae, and in the right inguinal region. None of these nodes were thought to be definitely enlarged. Some ascites was present, and the abdominal wall was lax. No abdominal organs could be palpated at first, but later, following a paracentesis, the liver could be felt as an irregular mass in the right subcostal region. It extended about three fingers' breadth below the costal margin. The spleen was not felt.

Blood count showed 15 Gm. of hemoglobin, 4,950,000 red blood cells, and 5,500 white blood cells, with 75 per cent segmented polymorphonuclear cells, 2 per cent non-segmented polymorphonuclear cells, 1 per cent eosinophils, 20 per cent lymphocytes and 2 per cent monocytes. The sedimentation rate was 10 mm. in an hour. The platelet count was normal. The mean corpuscular volume was 99 cubic microns. Urinalysis was negative, and a Kahn test was negative. Nonprotein nitrogen was 36 mg. per 100 cc., uric acid 4.2 mg. per 100 cc. Total serum proteins were 5.3 Gm. per 100 cc.—albumin 2.9, globulin 2.3. Aspiration of the bone marrow was performed, and showed the marrow to be hypercellular, with increased activity in both white cells and red cells, but with normal maturation. There was no evidence of malignant infiltration or of a leukemic process in the marrow.

Fluoroscopy and a film of the chest showed elevation of both diaphragms, most marked on the left. The heart and aorta were normal. A barium meal examination showed no intrinsic lesions of the esophagus, stomach, or duodenum; films made at five and twenty-four hours showed no pathology in the large or small bowel. A barium enema was also negative.

A galactose tolerance test showed an excretion of 1.2 Gm. and the hippuric acid test an excretion of 1.6 Gm. A bromsulfalein test showed 100 per cent retention in fifteen minutes, 70 per cent in thirty minutes, and 30 per cent in forty-five minutes. A glucose tolerance test showed a fasting level of 105 mg. per 100 cc., a rise to 203 and 200 in one and two hours respectively, and a fall to 119 and 90 in three and four hours respectively.

Biopsy of an inguinal lymph node showed only chronic lymphadenitis and no evidence of malignancy.

It was felt that the patient should be treated as a cirrhotic. He was given a diet containing 120 to 140 Gm. of protein, 250 to 400 Gm. of carbohydrate, and 100 Gm. of fat daily. Whenever the patient became unable to take the diet by mouth, it was given by means of a tube. Medication consisted of Salyrgan, 1 Gm. of methionine three times a day, and 1 cc. of crude liver extract four times a day intramuscularly. The patient did not respond to treatment, and on March 8, 1948, an abdominal paracentesis was done because of extreme distention, severe generalized abdominal pain, and respiratory distress. Six thousand cubic centimeters of amber fluid with a specific gravity of 1.006 was obtained; culture of this fluid was sterile. The total protein content of the ascitic fluid was 2.4 per cent. A few white blood cells and occasional red blood cells were present. Following the paracentesis the patient's respiratory difficulty improved considerably, but he became stuporous and unable to take food by mouth. Despite tube feeding and intravenous infusions he went progressively down hill and expired on March 11, 1948.

Discussion

DR. DAVID CAYER: This case might be discussed by an evaluation of the outstanding physical findings as they developed. These signs were generalized lymph node enlargement, noted approximately one year prior to the final hospital admission; the rapid development of ascites six or eight weeks before death; and enlargement of the liver.

Lymph node enlargement

Many of the more frequent causes of generalized lymph node enlargement can be fairly well ruled out from the information given in the clinical summary. Tuberculous lymphadenitis is unusual in a man of this age, and the absence of fever and pathology in the pulmonary or gastrointestinal tract, as well as the negative laboratory data, the lymph node biopsy, and the description of the ascitic fluid, eliminate this possibility. A diffuse gummatous syphilitic hepatitis accompanied by generalized lymphadenopathy can also be dismissed in view of the entirely negative venereal history and the negative blood serology. There is also little to justify a diagnosis of metastatic carcinoma to so many variable sites in addition to the peritoneal surfaces. There is nothing to

suggest a primary site, and the areas which are the most frequent sites of primary malignancy—that is, the stomach and bowel—have been studied, with negative results.

Hodgkin's disease, although it is seen most frequently in a younger age group, is a definite possibility which could explain all the findings. In 75 per cent of the cases of Hodgkin's disease, however, splenomegaly is present; and where the abdominal nodes and liver are involved, fever is usually a prominent feature. It was not mentioned in the present case. The wasting and anemia which usually accompany Hodgkin's disease are also lacking. Furthermore, it seems unlikely that the usually characteristic pathologic picture of Hodgkin's disease would go unrecognized in the original biopsy.

The differential diagnosis on the original biopsy was apparently thought to lie between leukemia and lymphoma. Clinically, this case would not appear to be an instance of lymphatic leukemia, the clinical diagnosis of which rests on the finding of splenomegaly, anemia, and thrombocytopenia. In addition, the sternal puncture and bone marrow findings were essentially normal. I scarcely see how we could be justified in making a clinical diagnosis of leukemia.

Lymphosarcoma would be a much more likely diagnosis and would fit the clinical picture of lymph node enlargement without splenomegaly. In addition, it is not uncommon for patients with lymphosarcoma to appear to do well clinically until the terminal phase of their illness.

Ascites

Approximately one year after the discovery of lymph node enlargement, ascites developed very rapidly and recurred after each paracentesis. Although ascites, in 50 per cent of the cases, is secondary to heart disease—usually mitral disease or pericarditis—, the absence of any associated cardiac findings or elevation of venous pressure allows us to eliminate a primary cardiac cause in this patient.

The possibility of carcinoma with peritoneal implants must again be considered. As was previously stated, however, the most frequent primary sites—the stomach, bowel, and pancreas—have been found to be negative. Generalized carcinomatosis would probably be accompanied by a rectal shelf, and no such finding is described. Ascites due to primary or metastatic carcinoma of the liver

is also relatively uncommon, and when it occurs it is usually secondary to glandular enlargement about the portal vein.

By far the most likely cause of liver enlargement and ascites in this patient would be portal cirrhosis. The abrupt onset of ascites and the rapidity of recurrence suggest the possibility of portal vein thrombosis. Acute portal vein thrombosis usually produces enlargement of the spleen, and hematemesis and melena are frequent. These findings are absent in the present case. A slower and more progressive form of thrombosis may follow stasis, and is sometimes secondary to cirrhosis.

Ascites is rare in leukemia, and would also tend to rule out this diagnosis.

Enlargement of the liver

The third finding, hepatomegaly, might be secondary to malignant change in a long-standing cirrhosis. The background of dietary inadequacy and alcoholism would certainly lead one to suspect this possibility. Primary carcinomatous change occurs in approximately 6 per cent of the cases of portal cirrhosis, but it is usually accompanied by fever, jaundice and pain, all of which are lacking in the present case. Furthermore, primary carcinoma of the liver is usually not accompanied by the laboratory evidence of parenchymatous disease found in this patient. It does not metastasize widely and would not account for the generalized lymph node enlargement noted in this patient.

It would seem, therefore, that no single diagnosis will explain all of the findings. I believe that the findings of hepatomegaly and ascites, the laboratory evidence of extensive liver involvement, and the history of inadequate diet and alcoholism would all support a diagnosis of far advanced portal cirrhosis. The abrupt development of ascites and the rapid recurrence of fluid would make one suspect portal vein thrombosis as a possible complication.

This single diagnosis, however, will not account for generalized lymph node enlargement, the tentative biopsy report of leukemia or lymphoma, the abnormal cells noted in the blood, or the leukocytosis. I believe that the most likely explanation for these findings, particularly in the absence of splenomegaly, would be lymphosarcoma. It is possible that the patient died of his cirrhosis before the other disorder developed sufficiently to produce additional anemia

and cachexia. One third of the patients with cirrhosis die in coma of progressive liver cell failure.

Dr. Cayer's Diagnoses

1. Portal cirrhosis.
2. Lymphosarcoma.

Anatomic Discussion

As was expected, a large quantity (4,000 cc.) of ascitic fluid was encountered upon opening the peritoneal cavity. The liver weighed 1,350 Gm., and presented both macroscopically and microscopically the typical picture of nodular (portal) cirrhosis.

Findings in the lymphatic tissues were not so conclusive. The lymph nodes throughout the body were essentially normal, showing only minimal reticulo-endothelial hyperplasia in some instances and fibrosis in others. The spleen was only slightly enlarged (200 Gm.).

Foci of mature lymphocytes were scattered throughout the bone marrow. In this connection it is to be remembered that lymphocytes are not normally found in the bone marrow in number greater than can be accounted for by the circulating blood⁽¹⁾. In the absence of other positive findings in the hematopoietic system, their presence in this case can probably be accounted for by the extensive degeneration present in the liver. Focal accumulations of lymphocytes in the bone marrow are not infrequently seen in various degenerative diseases. I do not believe that the lymphadenopathy and cellular alterations noted initially in the clinical record were a result of a primary disturbance in the hematopoietic system.

Anatomic Diagnoses

1. Nodular cirrhosis of the liver with ascites
2. Focal lymphocytic accumulations within the bone marrow
3. Reticulo-endothelial hyperplasia and fibrosis of the lymph nodes
4. Bronchopneumonia, bilateral
5. Pancreatic fibrosis with cyst formation and squamous metaplasia of the pancreatic ducts
6. Nodular hyperplasia of the prostate gland
7. Generalized arteriosclerosis

1. Krumbhaar, E. B. and Custer, R. P.: Note on the Differential Cell Counts of Bone Marrow, with Special Reference to Estimation of Infrequently Appearing Cell Types, *Am. J. Med. Sc.* 189:630-633 (May) 1935.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

October, 1948

No. 10

IN the war against tuberculosis the mass X-ray survey may well be considered as a reconnaissance undertaken to discover where the enemy is hidden, so that practicing physicians in the area may attack the disease most effectively. It is upon their efforts, supplemented by services within the community and reinforced by public awareness of the problem, that success or failure in the control of tuberculosis depends.

THE COMMUNITY AS A FORCE IN THE CONTROL OF TUBERCULOSIS

Modern epidemiological methods in the control of communicable disease make it imperative for workers in the field to know where, when, who, and how many any given disease attacks. The swiftest and most efficient way to the heart of this problem in the field of tuberculosis is through X-ray surveys of large population groups, preferably those which compose large metropolitan areas. These present all manner of social complexity, racial variation, and economic resources.

At the beginning of organized control movements, it was believed that the most effective means of discovering the exact nature of the tuberculosis problem in the United States was through surveys of industrial, occupational and racial groups. However, the knowledge thus secured was at best spotty and was likely to be misleading when the whole population of the country was considered. It was thereupon determined to delve into those vast reservoirs of human beings which are our great cities. Here are all the maladies that are suffered by mankind. Through a prompt discovery of the tuberculosis problem in the larger cities of our country, a reasonably exact knowledge of the extent of the problem could be realized, public action stimulated, and professional forces joined.

City-wide X-ray surveys can be conducted with relative economy of means and money. Concentration of personnel, machinery, and educational devices within densely populous communities provides, in certain respects, quicker and more valuable results than do studies conducted in sparsely settled areas. Previous experience in cities already surveyed indicates that if present facilities are fully utilized, the increased case load of tuberculosis will not present a grave problem to the community. Seventy per cent of all new cases discovered by mass X-ray survey are minimal and do not constitute a grievous public health problem. Most of these cases will be non-infectious; the disease process will be incipient; and the probability of serious progression, with adequate follow-up, will be slight. Such cases can be cared for by private physicians and public clinics, assisted by public health nurses and medical social workers. Sanatorium beds now occupied by noninfectious cases can be given over to far-advanced virulent disease which constitutes a menace to the total population.

Minimal, noninfectious cases are private physicians' cases, not sanatorium cases. The private practitioner can be a major force in the future control of tuberculosis in the communities of our country if he participates in follow-up activities after the

survey has been completed. Through his efforts, minimal tuberculosis can be checked and, in individual cases, never become serious. Under the physician's care, needless distress and tragedy can be avoided. As a consequence of his vigilance, the general practitioner can reduce measurably the occurrence of deaths from tuberculosis.

Often communities can afford to enlarge present clinic and hospital facilities when they cannot afford to build new institutions. Recruiting professional personnel is always a serious problem everywhere. However, resolute efforts to procure and then train professional workers will be productive of fruitful results.

An aroused community makes for organized action. An informed community acts collectively as a social weapon against any threat to its existence. A community aware of the problem confronting it and organized for effective action is the principal force in a program to control tuberculosis. Isolated leaders and their followers, no matter how well trained or how profoundly dedicated, have little potency without the strength inherent in the human and economic resources of mobilized communities. By now it must be plain that the fight against tuberculosis is a social and economic movement as well as a disease problem. We now have enough information to be confident that an awakened awareness of the people is the chief tool for triumph.

The Community as a Force in the Control of Tuberculosis, Frances J. Weber, M.D., Editorial, *Public Health Reports*, September 5, 1947.

THE USE OF STREPTOMYCIN IN TUBERCULOSIS

A Report by the Committee on Chemotherapy and Antibiotics of the American College of Chest Physicians

September 23, 1948

The Committee on Chemotherapy and Antibiotics of the American College of Chest Physicians submits the following report of the use of streptomycin in tuberculosis.

Indications for Treatment:

Nearly all forms of tuberculosis respond to treatment with streptomycin in some degree. However, the drug should by no means be used indiscriminately.

Pulmonary Tuberculosis: It is extremely difficult to lay down hard and fast rules for the use of streptomycin in pulmonary tuberculosis. Especial care in the selection of cases is necessary. The drug has its greatest usefulness in cases with an appreciable amount of exudative disease. In some other cases streptomycin is responsible for symptomatic improvement and the prevention of complications.

1. **Definitive treatment:** This category includes chiefly progressive lesions of recent origin with little or no destruction of tissue, such as progressive primary tuberculosis and tuberculosis due to hematogenous and bronchiogenic dissemination.

2. **Preparation for surgical procedures,** including temporary and permanent collapse and excisional surgery. In some cases pneumothorax can be instituted sooner and with greater safety after a course of streptomycin. Not infrequently the drug is of great value in preparing patients as candidates for thoracoplasty. As prophylaxis, streptomycin should be used routinely in excisional procedures.

It must be emphasized again and again that streptomycin is **not** a substitute for sanatorium care and other proven procedures. Rather it is a valuable adjunct to these other measures.

Extrapulmonary tuberculosis: Streptomycin is the only treatment available in miliary tuberculosis and

tuberculous meningitis. In such cases early and intensive treatment is imperative. Streptomycin is the treatment of choice for tuberculous sinuses, tuberculous of the oropharynx, larynx and tracheobronchial tree, tuberculous enteritis and peritonitis, tuberculous otitis media, and tuberculous pericarditis. In renal tuberculosis, symptomatic improvement is usually prolonged and bacterial conversion occurs in some cases. Tuberculosis of the bones and joints is often improved by streptomycin but chemotherapy is not a substitute for orthopedic surgery when this is indicated.

Streptomycin is valuable as pre-operative and post-operative treatment of tuberculosis in surgery of the genito-urinary tract, surgery of bones and joints, pericardiectomy, incision and drainage of abscesses and fistulectomy.

Administration:

Streptomycin is administered by intramuscular or deep subcutaneous injection. The optimal regimen for the administration of streptomycin has not been determined. In most forms of tuberculosis results appear to be satisfactory when a dose of .5 to 1 gram a day are administered in one or two injections for six to eight weeks. With this mode of therapy complications are very infrequent and in most cases their clinical importance may be discounted. In tuberculous meningitis and miliary tuberculosis treatment should be vigorous; a dose as high as two grams per day for four months, or longer is necessary. In tuberculous meningitis results seemingly are better when intramuscular injection is supplemented by intrathecal injection of from 25 to 50 milligrams every twenty-four to forty-eight hours for two or three months, or as long as this method of administration is tolerated by the patient.

Since drug fastness is apparently closely related to duration of treatment, regardless of the daily dosage, limitation of the period to a few weeks may be effective in avoiding this phenomenon in many cases.

The physician handling a case of tuberculosis would do well to ask himself the following questions before administering streptomycin.

1. Why is streptomycin being used: for definitive therapy, as preparation for surgery, for prophylaxis, or for relief of distressing symptoms?

2. Is the type of lesion present of such a nature as to warrant the use of streptomycin in addition to other available therapy?

3. Can the purpose of chemotherapy be accomplished within the relatively short period of the drug's effectiveness? (Almost three-fourths of the patients show resistant organisms after three to four months of continuous daily streptomycin treatment.)

Other Chemical and Antibiotic Substances

There is no other substance known today which compares with streptomycin in its effectiveness against tuberculosis. The sulfones, promin and promizole, are generally ineffective alone. Experimental work is in process to determine whether or not there is synergistic action when any of these are added to streptomycin. Para-aminosalicylic acid is promising on the basis of laboratory experimentation but sufficient clinical work has not yet been done to permit evaluation of this drug. Subtilin has not had sufficient clinical trial and there is not yet enough animal experimentation to indicate its usefulness. Of the many other antibiotic substances, none has shown in preliminary experimentation indication of real value against tuberculosis and none has had clinical trial.

Submitted for the Committee on the Management and Treatment of Diseases of the Chest by the Subcommittee on Chemotherapy and Antibiotics.

PUBLIC RELATIONS

None of us would deny that our relations with the public need to be greatly improved. This problem can be approached in two ways:

1. Much can be accomplished by medical organizations at the various levels: national, state, district, and county.

2. It is the doctor as an individual who can accomplish more than all medical organizations combined.

Certainly any citizen is more influenced by his physician, in whom he has confidence, than by a publicity release from a medical society. The average busy doctor, seeing 25 to 50 patients daily, has just this many opportunities to influence public opinion where public opinion first originates, with the individual. He has the unparalleled opportunity to influence public opinion favorably, not only by words, but by efficient, sympathetic service and at a reasonable cost.

But whether it be the medical society or the individual physician who is the emissary of good will, there need be no necessity for assuming an attitude of defense. The history of the medical profession and the achievements of American medicine provide a firm foundation for offense.

Let it be known, as was shown in a recent study of the Brookings Institute, made at the request of Senator H. Alexander Smith, Chairman of the Sub-Committee on Health, that "the United States under its voluntary system of medical care has made greater progress in the application of medical and sanitary science than any other country. This progress is now reflected in low mortality and morbidity rates of infectious diseases and in increased life expectancy. There is every reason to believe that these trends will continue unabated under our present system of medical care." And, too, "The advances in health among both the whites and the non-whites that have been made in the United States in the past four decades do not suggest basic defects in the American system."

And to those who would favor compulsory health insurance let it be known that "the large majority of American families have the resources to pay for adequate medical care if they elect to give it a high priority among the several objects of expenditure. The issue is not whether they can afford

medical care but whether they should be compelled by law to pool their risks and to give payment for medical care a top priority." It is true that "the United States has some individuals and families not possessed of the resources to enable them to pay for adequate medical care. . . . It is doubted if they could be effectively covered by compulsory insurance because they would lack the means to attain and maintain an insured status." In the past, provision has been made for these people chiefly by private philanthropy. Our present system of taxation makes a continuation of this impossible. In the future, provision must be made for them chiefly through public funds. And finally, "It must be remembered that good health is not exclusively a matter of medical care; it also impinges upon causative factors that are nonmedical, such as food, shelter, vice and crime, transportation, and industry. Its maintenance depends also upon the intelligence, interest and cooperation of the individuals, families, and local communities."

Our committee on public relations is doing excellent work. It has accomplished much and it will accomplish more; but let us remember that in final analysis any real and lasting improvement in our relations with the public will rest primarily upon the individual doctor, who must do his utmost to practice honest, efficient, sympathetic medicine and at a reasonable cost to the patient.

DONNELL B. COBB, M.D.
Goldsboro

CORRESPONDENCE

914 Johnston Building
Charlotte 2, North Carolina
September 17, 1948

To the Editor:

You will recall that the Federal Bureau of Investigation has for some time been seeking the apprehension of one Hugo Bob Hubsch, and in this regard you were contacted in view of his physical condition with the purpose in mind of publishing his description.

I wish to advise you that Hubsch has been apprehended and again express to you my appreciation for your cooperation in this matter.

Very truly yours,
Charles W. Brown
Special Agent in Charge

BULLETIN BOARD

NEWS NOTES FROM UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE

Postgraduate medical courses sponsored by the University School of Medicine and the Extension Division have been arranged at Shelby beginning September 30 and at Salisbury beginning October 6, with the Medical Societies of Cleveland and Rowan Counties as co-sponsors of the program at each. The program for the two courses is as follows:

Shelby

September 30: After-Care and Social Rehabilitation in Poliomyelitis—Dr. Morton Hoberman, New York City (Co-sponsor, National Foundation for Infantile Paralysis)

October 14: Recent Advances in Hematology; The Treatment of Leukemia with New Chemotherapeutic Agents—Dr. Roy R. Kracke, University of Alabama Medical College, Birmingham.

October 28: Diagnosis and Treatment of Diseases of the Colon—Dr. John deJ. Pemberton, The Mayo Clinic, Rochester.

November 11: Office Gynecology; Management of Important Obstetrical Problems—Dr. Edward A. Schumann, Philadelphia.

November 18: Common Metabolic Disorders in General Practice, Including Diabetes and Obesity—Dr. Elmer L. Sevringhaus, Nutley, N. J.

December 2: Neurosurgical Problems in General Practice—Diagnosis and Treatment—Dr. Barnes Woodhall, Duke University School of Medicine, Durham.

December 9: Management of Cardiovascular and Renal Diseases in General Practice—Dr. J. Edwin Wood, University of Virginia School of Medicine, Charlottesville.

Salisbury

October 6: The Treatment of Arthritis—Dr. Russell L. Cecil, Cornell Medical School, New York City.

October 13: Problems in Anemia and Other Diseases of the Blood—Dr. William P. Murphy, Harvard Medical School, Boston.

October 20: Basic Principles in the Administration of Food and Fluid to Infants. Psychogenic Factors in Anorexia and Other Problems—Dr. A. A. Weech, University of Cincinnati School of Medicine, Cincinnati.

October 27: Diagnosis and Treatment of Diseases of the Colon—Dr. John deJ. Pemberton, The Mayo Clinic, Rochester.

November 3: Functional Menstrual Disorders—Dr. Arthur V. Greeley, Cornell Medical School, New York City.

November 10: Problems in Obstetrics—Dr. Edward A. Schumann, Philadelphia.

* * * *

Dr. C. T. Kaylor, of the Department of Anatomy, and Dr. H. D. Bruner, of the Department of Pharmacology, attended the program on radioactive isotopes of the Cold Springs Harbor Symposium on Quantitative Biology and a series of lectures at the Brookhaven National Laboratory, Upton, Long Island, on nuclear physics fundamental to research in the application of radioactive substances to research in biological problems.

Dr. H. D. Bruner, of the Department of Pharmacology, and Dr. G. C. Kyker, of the Department of Biological Chemistry, were in Oak Ridge, Tennessee, for the four weeks' course in the techniques of using radioisotopes in research, which course was a part of the fellowship program developed by the division of biology and medicine of the Atomic Energy Commission.

Dr. K. M. Brinkhous, of the Department of Pathology, has been appointed to the Board of Editors of the *Journal of Laboratory and Clinical Medicine*.

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Dr. Ione Rhymer has joined the staff of the Department of Bacteriology as acting assistant professor. She received her Ph.D. degree from the University of Illinois, and recently has been doing research work at that institution.

* * * *

Dr. Margaret C. Swanton, instructor in pathology, is at the Royal Victoria Hospital in Montreal for a month's study in the methods used in cytological diagnosis of cancer; following the conclusion of this study she will visit the laboratory of Dr. George Papanicolaou, of Cornell Medical School, reviewing methods in use in his laboratory.

* * * *

Research grants for the present year have been made as follows:

Department of Pathology—\$13,716 for study of hemorrhagic diseases and \$5,000 for cancer teaching from the U. S. Public Health Service.

Department of Biological Chemistry—\$1500 to Sanford Steelman from the U. S. Public Health Service for the investigation of hydrolysis of proteins by means of aliphatic sulfonic acids; \$700 from the Alamance General Hospital for the investigation of the oxalic acid content of state and regional vegetables and fruits and its relation to calculus formation.

Department of Pharmacology—\$5,000 to Dr. H. D. Bruner from the Atomic Energy Commission for the study of blood flow in liver and kidney.

Department of Physiology—\$10,488 to Dr. John H. Ferguson from the U. S. Public Health Service for study of blood coagulation; \$14,000 to Dr. A. T. Miller from the University Physical Education Department for studies on fatigue; \$2500 to Dr. E. P. Hiatt from Cinchona Products to continue studies on the effects of cinchona alkaloids on the heart and blood vessels of mammals.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

A chapter of Alpha Omega Alpha, honor medical society, will be installed at the Bowman Gray School of Medicine on Friday evening, November 19. Bowman Gray was one of four medical schools in the country whose applications for chapters were approved this year.

* * * *

Dr. James A. Harrill was elected president of the North Carolina Eye, Ear, Nose and Throat Society at a joint meeting of the North Carolina Society and the South Carolina Society of Ophthalmology and Otolaryngology, held in Charleston, South Carolina, September 13-16. He also spoke on the subject of "Bronchography" at one of the sessions.

* * * *

A grant of \$3,500 from the Roche Anniversary Foundation of Montclair, New Jersey, has been made to the Department of Physiology and Pharmacology of the Bowman Gray School of Medicine. The grant, which provides for study of two types of drugs—vasodilator and vasoconstrictor—will be administered by Dr. Harold D. Green, head of the department. The school received a similar grant from the Foundation last year.

Dr. Harold D. Green served as associate editor for the section on "Circulation—Blood Flow Measurement" in a new book, *Methods in Medical Research*, which is just off the press of the Year Book Publishers. The book is the first in a series of volumes to be published on the subject under the direction of Dr. Van R. Potter, of the staff of the Medical School of the University of Wisconsin.

* * * *

Dr. George T. Harrell, Jr., professor of internal medicine, and Dr. David Cayer, assistant professor of internal medicine, delivered papers at the meeting of the Southern Medical Association, held in Miami, Florida, October 25-28. Dr. Harrell's subject was "Aureomycin—A New and Orally Effective Antibiotic," and Dr. Cayer's subject was "The Use of Radioactive Phosphorus in Measuring Phospholipide Formation in Patients with Liver Disease." Dr. W. E. Cornatzer, assistant professor in the Department of Biochemistry, collaborated on the latter paper, and Dr. Manson Meads, instructor in internal medicine, collaborated on the paper on aureomycin.

MATHESON FOUNDATION MEDICAL LECTURES

Charlotte, North Carolina

PROGRAM

Ballroom, Hotel Charlotte—October 21 and 22, 1948

Thursday, October 21

2 p.m. Symposium on Congenital Heart Disease

1. Dr. Arthur M. Master, Mt. Sinai Hospital, New York City—Clinical Aspects of Congenital Heart Disease.
2. Dr. Eugene Pendergrass, University of Pennsylvania, Philadelphia — Roentgenological Findings in Congenital Heart Disease.
3. Dr. Julian Johnson, University of Pennsylvania, Philadelphia—The Surgical Aspects of Congenital Heart Disease.

6 p.m. Private Dinners.

- 8 p.m. 1. Dr. George Gammon, University of Pennsylvania, Philadelphia — Clinical and Serological Results in the Treatment of Neurosyphilis with Penicillin Alone.
2. Dr. Robert A. Kimbrough, Jr., University of Pennsylvania, Philadelphia — Rational Uses of Estrogens.
3. Dr. Eugene Pendergrass, University of Pennsylvania, Philadelphia—Roentgen Diagnosis of Meningiomas.

Friday, October 22

2 p.m. 1. Clinicopathologic Conference

Dr. Balduin Lucke, University of Pennsylvania, Philadelphia

Dr. Kendall A. Elsom, University of Pennsylvania, Philadelphia

2. Dr. Byron E. Hall, Mayo Clinic, Rochester, Minnesota—Current Trends in the Treatment of Diseases of the Blood and Blood-forming Organs.

6 p.m. Social Hour—Rose Room, Hotel Charlotte

7 p.m. Dinner—Ballroom, Hotel Charlotte

- 8 p.m. 1. Dr. J. Burns Amberson, Columbia University, New York City—The Behavior of Tuberculosis under Streptomycin Treatment.
2. Dr. Harry Gold, Cornell University, New York City — Management of the Failing Heart.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Vital statistics for the first half of 1948 now have been compiled by the North Carolina State Board of Health, together with comparative figures for the corresponding period of 1947.

From January 1 through June 30, 54,842 live births were reported, as compared with 57,176 for the same months last year—a decrease of 2,334. It was not expected that the high rate maintained through last year would continue indefinitely.

As to the number of deaths from all causes, 15,781 were reported the first half of this year, an increase of only 389 over last year. This increase was more than accounted for by that reflected in deaths from just four degenerative diseases—namely, heart disease, apoplexy, cancer and nephritis which killed 8,818, as compared with 8,197 during the first half of 1947.

While deaths from nephritis seem to be stationary, or on the decline (slightly) for the time being, this cannot be said of heart disease, apoplexy and cancer. For example, during the first six months of 1947, there were 3,778 deaths in North Carolina due to heart disease; the total for the corresponding period of the present year rose to 4,287. This was a substantial increase. Apoplexy deaths rose from 1,736 to 1,822, and cancer deaths from 1,292 to 1,395. All such deaths have been increasing steadily during recent years, these diseases having shoved tuberculosis, typhoid fever and several others into the background.

* * * *

Basing his remarks on figures furnished by the office of Colonel L. C. Rosser of State Department of Motor Vehicles, Dr. Roy Norton, State Health Officer, has made the following statement concerning traffic accidents involving children in North Carolina.

"During the entire year of 1947, 96 children under 15 years of age died as the result of traffic accidents. Of this number, 68 were pedestrians struck by vehicles; 16 were bicyclists, and the remainder were passengers in wrecked cars."

"In addition to the 96 children who were killed, 621 children under 15 were injured, many of them severely, quite a number maimed for life. Of the total number injured, 265 were pedestrians, 63 were bicyclists and the others passengers in the cars involved in the accidents."

"... For the first six months of 1948—the current year—there were 308 traffic deaths reported by the State Department of Motor Vehicles. Of this number, the compilation shows, 45 were children under 15 years of age. Thirty of these were pedestrians, six were bicyclists, and the others were passengers in the vehicles involved."

"Compare these figures with deaths in North Carolina resulting from diseases associated with early childhood, for the periods under consideration. During the entire year of 1947, when 96 children under 15 died as the result of motor vehicle accidents, only 33 died of diphtheria, 26 of measles, two of scarlet fever, 53 of whooping cough, and 21 of poliomyelitis."

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

An Institute for Tuberculosis Workers was conducted by the National Tuberculosis Association in cooperation with Johnson C. Smith University at Charlotte, October 5 to 12. The Institute was planned primarily for Negro lay workers in the tuberculosis

movement. Among those taking part in the program was Dr. P. A. Yoder, superintendent and medical director of the Forsyth County Tuberculosis Sanatorium.

NINTH DISTRICT MEDICAL SOCIETY

The Ninth District Medical Society held its annual meeting in Statesville on September 30. Doctors taking part in the afternoon program were Dr. C. W. Armstrong of Salisbury, Dr. J. L. Pressly of Statesville, Dr. J. A. Valone of Lexington, Drs. W. H. Patton and John C. Reece of Morganton, Dr. J. W. R. Norton of Raleigh, and Dr. S. F. Ravenel of Greensboro. Dr. James W. Davis of Statesville was toastmaster for the dinner meeting, at which Dr. Roscoe D. McMillan of Red Springs and Dr. Norman Q. Brill of Washington, D. C., were guest speakers.

The next meeting of the Society will be held in Lenoir on the last Thursday in September, 1949. Dr. Roy Tatum of Taylorsville was elected president for the coming year, Dr. C. R. Hedrick of Lenoir, president-elect, and Dr. Charles M. Kendrick secretary. Dr. W. D. McLelland of Mooresville was the retiring president, and Dr. I. E. Shafer of Salisbury is district counselor.

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Speakers at the September meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on September 15, were Dr. J. W. R. Norton of Raleigh, State Health Officer, and Dr. Julian Brantley, Jr., of Rocky Mount, who spoke on "Toxic Separation of Placenta with Anuria."

FORSYTH COUNTY MEDICAL SOCIETY

A dinner meeting of the Forsyth County Medical Society was held in Winston-Salem on September 14 for a discussion of the Red Cross Blood Bank program.

NEWS NOTES

Dr. Hassell Brantley of Spring Hope, the oldest member of the Edgecombe-Nash Counties Society, died recently. His son, Dr. Julian Brantley of Spring Hope, and his grandson, Dr. Julian Brantley, Jr., of Rocky Mount are both members of that society.

* * * *

Dr. DeWitt D. Phillips, Jr., has become associated with Dr. Frank Ray of Charlotte in the general practice of medicine.

GRANT FOR RESEARCH

Smith, Kline & French Laboratories of Philadelphia, manufacturers of ethical pharmaceuticals, announces the award of a grant in aid of medical research to the Duke University Medical School for research by Dr. Frank Melton, under the direction of Dr. J. L. Callaway, on the metabolism of fungi (\$2,500).

NASHVILLE POST GRADUATE MEDICAL ASSEMBLY

The Nashville Post Graduate Medical Assembly, sponsored by the Nashville Academy of Medicine, was held in Nashville, Tennessee, October 6 and 7. Among those appearing on the program were Drs. E. C. Hamblen and Julian M. Ruffin of the Duke University School of Medicine, Durham.

(BULLETIN BOARD CONTINUED ON PAGE 546)

AUXILIARY

LETTER FROM THE FIRST VICE PRESIDENT

Dear Auxiliary Members:

According to the roster of members of the State Medical Society, there are ninety-six counties organized into eighty-one different societies. The Auxiliary to the Medical Society has organized into twenty-eight groups made up of thirty-four counties. The lines of organization of the Auxiliary must follow those of the county medical society.

For a local group to organize, it is necessary to secure the permission of the medical society of that county. The councilor of each district will assist in arranging the organizational meeting.

Sometimes it has seemed advisable to organize on a district level before having a county organization. This has been an easy pattern to follow, since the auxiliary meeting is called at the same time of the district medical society meeting.

In communities where there is no organization the wives of doctors are invited to be members-at-large.

The Auxiliary is looking forward to a year of expansion. We are also looking forward to a year of growth in fellowship and understanding because we know each other better and because we comprehend more of the problems of the medical profession as well as something of the problems of the people of North Carolina who are served by the profession.

The following District Councilors will welcome inquiries from groups ready to organize:

First District (Bertie, Chowan-Perquimans, Gates, Hertford, and Pasquotank-Camden-Dare-Currituck)—Mrs. J. E. Smith, Windsor.

Second District (Beaufort, Carteret, Craven, Hyde, Jones, Lenoir, Martin-Washington-Tyrrell, Pamlico, Pitt)—Mrs. Ben Royal, Morehead City.

Third District (Bladen, Brunswick, Columbus, Duplin, New Hanover, Onslow, Pender, and Sampson)—Mrs. E. C. Anderson, Wilmington.

Fourth District (Edgecombe, Nash, Greene, Halifax, Johnston, Northampton, Wayne, Wilson and Warren)—Mrs. J. W. Rose, Pikeville.

Fifth District (Chatham, Cumberland, Harnett, Hoke, Lee, Moore, Richmond, Robeson and Scotland)—Mrs. Stuart Willis, McCain.

Sixth District (Alamance-Caswell, Durham-Orange, Franklin, Granville, Person, Vance, Wake)—Mrs. W. T. Ward, Raleigh.

Seventh District (Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Montgomery, Rutherford, Stanley, and Union)—Mrs. Charles Nance, Charlotte.

Eighth District (Forsyth-Stokes, Guilford, Randolph, Rockingham, Surry-Yadkin, Wilkes-Alleghany)—Mrs. C. V. Tyner, Leaksville.

Ninth District (Avery, Burke, Caldwell, Catawba, Davidson, Iredell-Alexander, Rowan-Davie, and Watauga-Ashe)—Mrs. J. S. Holbrook, Statesville.

Tenth District (Buncombe, Cherokee, Haywood, Henderson, Jackson, McDowell, Macon-Clay, Madison, Mitchell-Yancey, Swain-Graham, and Transylvania)—Mrs. Charles D. Thomas, Black Mountain.

Let's start working early in the year to insure an effective job for the Auxiliary.

Sincerely yours,

MRS. W. REECE BERRYHILL
First Vice President and
Chairman of Organization



RECIPE FOR HUMAN WELFARE

Human beings require balanced diets for health and well-being. A community, likewise, cannot get along with nothing but recreational facilities . . . or health services only . . . or care for children alone. Like the individual man, woman or child, the community—which includes many men, women and children—needs a balanced ration of health and welfare. The Community Chest, combining many Red Feather services for health, recreation, child care and family aid, presents this balanced ration. Make your Community Chest pledge now . . . and GIVE ENOUGH FOR ALL THE RED FEATHER SERVICES.

BOOK REVIEWS

Textbook of Endocrinology. By Hans Selye, M.D., Ph.D., Prague, D.Sc. McGill, F.R.S. Canada, Professor and Director of the Institute of Medicine at Chirurgie Experimentales, University of Montreal. Preface by Professor Bernardo A. Houssay. 914 pages. Price, \$10.24. Montreal, Canada: Acta Endocrinologica, University of Montreal, 1947.

Dr. Selye has accomplished a correlation of the data pertaining to the specialized field of endocrinology in one complete volume. In preparing his **Encyclopedia of Endocrinology** he compiled a library of more than 250,000 entries upon the field of endocrinology. In the present **Textbook of Endocrinology** he has brought together in the form of a concise and balanced summary the most important and best established facts concerning all branches of the science of internal secretions.

The organization of the book is excellent. A major section is devoted to each of the glands of internal secretion and the abnormalities associated with deviations from normal function. A section on general endocrinology, including the definition and scope of endocrinology, mechanism of hormone action, and correlations, is present. A full index and an elaborate table of contents, with subheadings referring to specific endocrine problems, facilitate location of the subject matter.

Numerous photographs and concise charts and diagrams illustrate this text. An excellent picture of the clinical appearance of each endocrine abnormality is included.

Dr. Selye's interesting style and his ability to organize his material, together with the large, clear print and good quality paper, make this text very easy to read.

The reviewer considers this the best book on general endocrinology which has appeared recently. It is highly recommended for medical students, general practitioners, and specialists.

Advances in Military Medicine. Edited by E. C. Andrus and others. 900 pages. Price, \$12.50. Boston: Little, Brown, and Company, 1948.

This two-volume work was edited by a distinguished group of American scientists. The title somewhat conceals the true nature of the contents. It is true that most of the advances described in the books were of particular military importance. However, the description of progress in military medicine during the early nineteen-forties was the story of the progress of medical science in general. This work gives a good idea of the terrific problems which faced medical science during the war. The solution of those problems made by the unprecedented effort of American and other allied scientists, backed by unlimited physical and financial resources, is described in some detail.

The book is really a chronicle of the work of the Committee on Medical Research of the Office of Scientific Research and Development. As such, it should be on the shelves of every medical library where reference work will be done. It is also recommended for private libraries where the reader may be interested in an over-all perspective of medical progress during the war years. Although much valuable information is contained in the two volumes, the work can not be recommended generally for a ready reference book or for a book of universal medical appeal.

Advances in Pediatrics, Volume 3. Edited by S. Z. Levine, M.D., Allan M. Butler, M.D., L. Emmett Holt, Jr., M.D., and A. Ashley Weech, M.D. Eight contributors. 363 pages. Price, \$7.50. New York: Interscience Publishers, Inc., 1948.

The third volume of **Advances in Pediatrics** again presents a series of monographs on subjects of pediatric interest. In general, the choice of articles and authors is excellent. Five of the eight articles were of particular interest to this reviewer.

Clement A. Smith discusses the problems of the newborn infant clearly. The etiology and treatment of disease in the newborn are presented so clearly that this chapter is almost obligatory reading for the general practitioner, obstetrician, and pediatrician.

William G. Lennox outlines authoritatively the present approach to the treatment of epilepsy. The logical presentation makes this an extremely easy article to read. Those physicians who are discouraged in the treatment of epilepsy will find this a most valuable paper.

Joseph Stokes, Jr., brings the status of viral hepatitis up to date. Because of the apparent increase in this syndrome, this discussion should be of considerable interest.

Sexual development during childhood and adolescence is a much misunderstood problem. Lawson Wilkins discusses the question in a scholarly manner, giving particular attention to normal variations.

"The Osteochondroses" by Beckett Howorth brings to the attention of the physician the probability that this disease is not diagnosed as frequently as it should be. The therapeutic procedures are outlined. These would be of particular interest to the orthopedist.

Well presented, but of less widespread interest, are the sections on "Retrolental Fibroplasia," "Emotions and Symptoms in Pediatric Practice," and "Psychologic Considerations of Puberty and Adolescence."

The references alone are worth while. This volume should be read by all who are interested in anything more than the superficial approach to the subjects presented. It is difficult to say whether the student, practitioner, or specialist would find this book more useful. It is hoped that the publishers will continue to put out similar volumes periodically.

An Introduction to Physical Methods of Treatment in Psychiatry. By W. W. Sargant and E. T. O. Slater, ed. 2. 215 pages. Price, \$3.50. Baltimore: Williams & Wilkins Company, 1948.

The second edition of this volume brings up to date the methods of physical therapy, that branch of treatment which has borne such important fruit in the specialty of psychiatry. The main plan of the second edition is similar to that of the first. This book answers many of the important questions concerning the treatment of the mentally ill patient. Technique is described in detail, and the risks, complications, contraindications, and other pertinent factors are presented in clear, concise, and usable form. There is an excellent section on prefrontal lobotomy, and a very fair estimate of the expected results is set forth.

This book is recommended for several medical groups. It is an excellent handbook for those beginning psychiatric therapy. It is recommended for the medical student, and also for practitioners in any branch of medicine who wish to know of the treatment carried out in psychiatric institutions, and what might be accomplished by modern therapy of the nervous and mental disorders.

Medical Writing, The Technic and the Art. By Morris Fishbein, M.D., Editor, *The Journal of the American Medical Association*, with the assistance of Jewel F. Whelan, Assistant to the Editor. Ed. 2. 292 pages. Price, \$4.00. Philadelphia: The Blakiston Company, 1948.

The second edition of Fishbein's *Medical Writing* is 80 pages longer than the first, and is improved in many ways—format, typography, and organization. A chapter on "Indexing" has been added, and the chapters on "Illustrations," "Preparation of the Manuscript," and "Proofreading" have been revised and expanded. Among the new material included are a table of eponymic diseases, a section on abbreviations in ophthalmology, a section on trade-marked drugs, and a paragraph on reprints (which is inserted, oddly enough, in the chapter on "Tables and Charts").

One apparent contradiction has resulted from the insertion of new material: On page 45 it is now stated that "Another expression to be eradicated is 'biopsy showed' or 'revealed.' It is of course the histopathologic examination and not the operation of performing a biopsy which showed what was present." According to page 53, however, "Biopsy is an examination of tissue; it is therefore not correct to speak of 'taking a biopsy.'"

This book, of course, presents chiefly the editorial policies of the publications of the American Medical Association, which are not accepted by all medical writers and editors. Nevertheless, Dr. Fishbein, as editor of the *Journal of the American Medical Association*, is in a position to speak with authority on the subject of medical writing. Certainly any writer who follows faithfully the suggestions given in his book need never be ashamed to send his manuscripts to any medical publication in the country.

This book, if not required reading for all physicians, should certainly be used as a guide by all who contribute—or aspire to contribute—to medical literature.

History of the Medical Society of the District of Columbia. Part II, 1833-1944. By the History Committee: John Benjamin Nichols, chairman; William Johnston Mallory, Joseph Stiles Wall. 357 pages. Fourteen illustrations. Baltimore: Waverly Press, 1947.

This publication constitutes the second volume of a comprehensive history of the Medical Society of the District of Columbia, founded in 1817. The first volume was published in 1909, "a valuable historical contribution, a rich mine of information relating to the activities" of the original society. The present volume contains the story of a merger with another independent organization, the Medical Association of the District of Columbia, founded in 1833. These two were joined together in 1911, forming one body, taking over "the functions, activities and powers of both the preceding organizations in equal and coordinate measure."

The book, as a historical report, is worthy of interest to those who would need it for reference, and as an addition to the general history of medicine in the United States. It is replete with indexes and cross-references, compiled with accurate and helpful citations. Over one half of the pages are devoted to names, dates, by-laws, and minutes of meetings. It represents an immense amount of toil by one or more whose personal devotion to the cause was strong and sincere.

Clinical Diagnosis by Laboratory Methods.—A Working Manual of Clinical Pathology. By James Campbell Todd, Ph.B., M.D., Late Professor of Clinical Pathology, University of Colorado School of Medicine; Arthur Hawley Sanford, A.M., M.D., Professor of Clinical Pathology, Mayo Foundation, University of Minnesota; Senior Consultant, Division of Clinical Laboratories, The Mayo Clinic; with the Collaboration of George Giles Stilwell, A.B., M.D., Division of Clinical Laboratories, The Mayo Clinic. Ed. 11. 954 pages, with 397 figures. Price, \$7.50. Philadelphia and London: W. B. Saunders Company, 1948.

The field of clinical pathology is becoming extremely complex, and any book dealing with all the tests of clinical chemistry, bacteriology, hematology, and parasitology and their interpretations would be ponderous and impractical for ordinary use. The eleventh edition of this well known work contains a large amount of pertinent information for the medical student, the technician, and the clinician. The organization is unchanged and is logical. In this volume additions have been made in material and illustrations which are concise and practical.

There are several features of this book, however, which contradict the subtitle, "A Working Manual of Clinical Pathology." For a "working manual," too much extraneous material is included, particularly in the chapter on sputum examination; one obtains the impression that this section has not been sifted and abstracted to the extent demanded by present-day concepts. The chapter on urinalysis is marred by the fact that the older tests are described with rather frequent disregard for the directions of the original author, and without a reference to the original publication. The section on Watson and Schwartz's test for porphobilinogen (p. 103) states that zinc acetate is used, whereas the directions given in the original article call for sodium acetate. Another example is the Ehrlich test for urobilinogen (p. 98, no reference), in which the statement is made that "normal amounts of urobilinogen will cause the red color only when the urine is heated." This statement has never been seen by the reviewer in any other set of directions for performance of this test. To students and technicians who use such a manual for setting up routines in the laboratory, the lack of proper references or statements giving the reason for modification of a test is a disadvantage. To teachers of students and technicians, the inclusion of such statements necessitates further annotations and correction of the text. Finally, the failure to include errors of some tests, and causes of false-positive tests gives the laboratory technician who does not have a background in medicine an unwarranted sense of security.

Despite the objections which limit this manual as a complete reference, the book is well written in relatively simple language, and is one of the more valuable texts in clinical pathology.

Classified Advertisement

WANTED—YOUNG PHYSICIAN for large North Carolina industry; class A medical school graduate; Southerner preferred. Good salary plus security benefits; regular hours. Give full particulars of self in reply. Address Box 2871, Winston-Salem, N. C.

BULLETIN BOARD

(CONTINUED FROM PAGE 542)

CORRECTIONS FOR THE DIRECTORY

The names of two members of the Committee to cooperate with the U.N.C. authorities with reference to the selection of the Medical School Faculty were inadvertently omitted from the list of committees which was published in the supplement to the August issue. Dr. Louis G. Beall of Morganton and Dr. Thomas H. Wright of Charlotte are also members of this committee.

* * * *

In the roster of fellows by counties, the data on Dr. Roy William Kirchberg, secretary of the Jackson-Swain Counties Society, should be changed to read as follows:

Kirchberg, Roy William, Sylva; Tulane, 1933; licensed 1935, joined State Society 1936.

* * * *

Dr. Phil Minnis Sherrill rather than Dr. V. C. Lanier is president of the Davidson County Medical Society.

* * * *

The following corrections in specialty listings have been sent in:

Dr. Fred G. Patterson of Chapel Hill should be GP rather than I.

Dr. R. T. Hubbard of Asheville should be GP rather than GP and Ob.

Dr. Thomas T. Jones of Durham should be GP rather than D.

Dr. Phil Minnis Sherrill of Thomasville should be S rather than GP.

Dr. Samuel S. Cooley of Black Mountain should be I rather than GP.

Dr. C. B. Davis of Wilmington should be D rather than GP.

Dr. L. J. Taubenhause of Shallotte should be GP&S rather than GP.

AMERICAN ACADEMY OF GENERAL PRACTICE

Eighteen outstanding medical teachers have been selected by the Program Committee for the first Annual Scientific Assembly of the American Academy of General Practice, to be held in Cincinnati, at the Netherlands Plaza Hotel next March 7, 8, and 9. The names of the essayists and their subjects will be announced later.

Arrangements have been made to accommodate more than 2,000 members and their wives. Non-members of the Academy may attend the Assembly as guests on payment of a registration fee of \$5.00. Only Doctors of Medicine may register. There will be no registration fee for members.

A printed form for requesting hotel accommodations will be sent to all members later. Members wishing to make reservations now may do so by addressing the Chairman, Sub-Committee on Hotels, American Academy of General Practice, Dixie Terminal Building, Cincinnati 2, Ohio.

AMERICAN COLLEGE OF SURGEONS

The thirty-fourth Clinical Congress of the American College of Surgeons will be held in Los Angeles, with headquarters at the Biltmore Hotel, October 18 to 22.

At the annual Convocation on the final evening, October 22, more than 900 initiates are to be received into fellowship.

AMERICAN SOCIETY FOR RESEARCH IN PSYCHOSOMATIC PROBLEMS

The annual meeting of the American Society for Research in Psychosomatic Problems will be held at Chalfonte-Haddon Hall, Atlantic City, May 1 and 2.

MEDICAL SOCIETY OF VIRGINIA

The Medical Society of Virginia held its annual meeting in Richmond, October 18-20.

DIAMOND JUBILEE OF NURSING

President Truman, ex-president Herbert Hoover and Senator Arthur H. Vandenberg, heading a committee of 70 leaders in public life, have joined with the American Nurses' Association in sponsoring the Diamond Jubilee of Nursing, which will be marked by celebrations throughout the country. The memory of Linda Richards, "America's first professional nurse," is to be especially honored during the Jubilee, signaling both the 75th anniversary of professional nursing in the United States and of Miss Richards' graduation from nursing school.

A Linda Richards Banquet will be held in New York City on November 16. The country's foremost nursing organization, with a membership of more than 162,000 registered professional nurses, will help "to focus public attention through the Jubilee on the extension and improvement of nursing service to all through the improvement of Schools of Nursing, economic security for all nurses, adequate licensure laws and more effective counseling and placement of both prospective students and graduate nurses."

A coast-to-coast program of activities highlighting the history and progress of nursing to the present day, and paying tribute to the 320,000 registered professional nurses of America, will be initiated during Nursing Progress Week, November 14 to 20.

THE NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

Funds totaling \$25,000, for production of an educational film on cerebral palsy, will be raised by the National Association of American Business Clubs within the next four months. F. H. Bachman, Campaign, Illinois, president of the organization, announced. The film, which will be produced by National Society for Crippled Children and Adults, will be available to all interested persons and groups.

Bachman also announced the appointment of co-chairmen of the cerebral palsy project for American Business Clubs. They are W. Hal Bird, Enka, North Carolina, and Schaefer Kendrick, Greenville, South Carolina.

AMERICAN RED CROSS

Broad steps towards peace and the humanization of warfare were taken at the Seventeenth International Red Cross conference held in Stockholm, Sweden, August 20-28, Basil O'Connor, President of the American Red Cross, said in a prepared statement upon his return to New York.

"Some of the most important developments in the 86 years of Red Cross history took place at the Stockholm conference," Mr. O'Connor said. "One new treaty—that affording protection to civilians in war time—and revisions of three others were proposed and approved. In addition, many new resolutions were passed, most of them affecting the world-wide operations of the Red Cross, but one in particular that called upon nations to outlaw the atomic bomb."

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PSYCHIC DISTURBANCES IN CHILDREN WITH CHRONIC ILLNESS

GEORGE A. WATSON, M.D.

DURHAM

The behavior problems attendant upon chronic diseases in children have long been recognized. In certain conditions their appearance is so common as to form an integral part of the underlying disease picture; thus, it is almost expected that the diabetic child will steal, the asthmatic will develop hypochondriacal traits, and the child with cardiac disease will become neurotic. That the psychic factor is a distinct entity and should be separated from the physical component has been stressed repeatedly. However, in most cases the psychiatric problem is not dealt with until after psychic factors have become established.

It would seem, then, that the pediatrician pays little attention to psychogenic features of illness in children. His task is to deal with these children at the inception of their illness, and he has an unparalleled opportunity to anticipate early behavior problems before they become full-blown complications of an organic illness. Thus the parent of a child with asthma should be cautioned against the development of hypochondriacal traits in the child when the diagnosis of asthma is established. The statement of Alvarez⁽¹⁾ that "The gastro-enterologist just has to be a psychiatrist of sorts" may be equally well applied to the pediatrician.

Factors Responsible for Psychic Disturbances

In a great measure the phobias attendant upon chronic illness in children are similar to the problems that confront the internist

and orthopedist dealing with disabled adults. When an oversolicitous attitude is assumed by the parents, a situation that is already dangerous may quickly become desperate. A diagnosis of rheumatic fever in the only child of well-to-do parents sets the stage for the development of a psychic problem which is often more severe than the underlying physical disability. If such a situation is further complicated by an emotionally unstable patient or parent, then the physician may well weigh the consequences of his diagnosis and refrain from informing the parents as to his opinion.

Something must, however, be said in defense of such patients and their families. The guilt for the dilemma in which these people are cast must in a large measure be borne by the medical profession. Articles in current magazines are constantly warning parents of the ravages of a host of ills which range from asthma to whooping cough. With these partially digested facts and the rigidly restricted regimen of diet and activity—often delivered hurriedly and casually by a busy physician—parents have cause to become overanxious. To tell the mother of an asthmatic that the child must be carefully protected from overexertion, temperature changes, and respiratory infections, and then, at a later date, to scold because the child is being overprotected, is to retard recovery in the patient and lose face with the parent. Psychoanalytic studies of asthmatic children have shown repression and over-anxiety to be prominent symptoms. These symptoms are but a natural consequence when little patients are placed upon a restricted regimen and parents are constantly reminded of the importance of close and con-

Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Pinehurst, May 5, 1948.

1. Alvarez, W. C.: Nervousness, Indigestion and Pain, New York, Paul B. Hoeber, 1943.

stant supervision.

Poliomyelitis is another disease in which a similar behavior problem may arise under a comparable set of circumstances. Seidenfeld⁽²⁾ found that 38 out of 100 patients with polio developed psychic problems severe enough for the parents to seek psychiatric aid. Children in the younger age groups became withdrawn and bewildered, while older patients were aggressive. Crying and instability in response to frustration were the most common early symptoms noted by Copellman⁽³⁾, who also observed that the severity of the psychologic reactions was often independent of the severity of the disease.

If we are to consider the personality of the child, we must look beyond the child to his home, family, and economic background—for the child's personality is often a reflection of these factors. The majority of children plagued with chronic illness are from families in the lower-income groups—children dependent wholly or in part on clinics and charitable organizations. In another group, better off financially, the continued strain of a chronic illness soon reduces the family to a marginal classification where clinic aid must be accepted or the family budget dangerously strained. Economics then plays a vital role in determining psychic disturbances.

A family of modest means will insist at the onset that their child receive the best available medical attention, gladly making financial sacrifices to achieve this end. With the passage of months or years, however, when little improvement is evident, a resentment, conscious or unconscious, develops against the sick member. Even among clinic patients an analogous situation develops. The working mother of a diabetic patient, forced to spend long hours in the clinic with her child, will frequently become resentful. Resentment then plays an important role, spreading slowly like an indolent sore, retarding clinical improvement and adding "headaches" and frustrations for the now harassed physician.

When there are other children in the family group, these siblings may well provide a basis for friction even when the parents retain a balanced equilibrium. Solici-

tous and cooperative at first, they become resentful of the time and attentions bestowed upon the invalid member. When, with the passage of time, they are forced to make sacrifices of time and possessions, resentment increases.

Means of Avoiding or Correcting Psychic Disturbances

Attempts at correction of the problems briefly stated above are best made at the onset of illness, or as soon as a positive diagnosis has been reached. Some physicians feel that warnings are premature or ill advised—fearing that to suggest the possibility of psychic disturbances is the best way of insuring their appearance. Such fears are not supported by experience, however. Warnings will not only prepare the parent, but will serve as the basis for dealing with problems should they subsequently appear.

If the parents have been forewarned, they may be able to avoid many of the usual sources of trouble. Brothers and sisters are told as frankly as possible just what the medical difficulty is, what must be expected, and what part, if any, they will be called upon to play. The patient, age permitting, should be dealt with just as frankly. Since the intelligence of these children is unimpaired, their understanding may help to a great degree in solving the problem. Self care should be stressed in an effort to develop the child's own will to improve. While motor activity must often be curtailed, no excuses should be accepted for a lag in mental activity. This point is important, and unfortunately is one which is often ignored by parents and society. Workers at Bellevue Hospital found that chronically ill children were far more content when school work was provided than they had been previously, and this finding has been substantiated repeatedly.

When a child with a chronic illness is seen by his physician for periodic examinations, it is essential that he understand the necessity for the visit. Some concrete statement regarding points of improvement or ways in which the patient has held his own will offer encouragement. Explanation of failure to improve is equally important, and must be understandable to both the child and the parents. The therapy must be carried further, with the introduction of some item of a previously determined plan—increased activity

2. Seidenfeld, M. A.: The Psychological Sequelae of Poliomyelitis in Children. *Nerv. Child* 7:11-28 (Jan.) 1918.
3. Copellman, F. S.: Follow-Up of 100 Children with Poliomyelitis. *Family* 25:289-297, 1944.

for the rheumatic, passive exercise for the paralytic, a new food for the diabetic, an added contact for the asthmatic.

If the pediatrician contrasts his meticulous supervision of the acute stage of an illness with his casual attitude toward the chronic phase of the same illness, he will understand why parents are bewildered by what may appear to be indifference to the less dramatic stage of a disease.

If a program for convalescence or adjustment to the limitations of a disease is stressed at the follow-up medical examinations, many fears are allayed before they become serious. Necessary restrictions are enforced, needless restrictions are avoided, and much encouragement for the patient and the family will result from these visits.

An example of the effectiveness of this approach is the result of ambulatory treatment of rheumatic fever patients in the armed forces. First instituted in air corps hospitals, it was, with modification, adopted by other services⁽⁴⁾. Hohman⁽⁵⁾ reports a series of cases from naval records. Sixty patients with rheumatic fever were divided into two groups and kept under six weeks' observation. The control group was kept on the usual regimen of bed rest, while the experimental group was allowed to be ambulatory as soon as possible and placed under psychiatric guidance. Measured by the usual physical and laboratory standards, there was no significant difference between the two groups except a uniform gain in weight in the experimental group and a uniform loss of weight in the control. The difference lay in the mental hygiene of the two groups, for the experimental group produced but one cardiac neurosis and one behavior problem, while the control group produced 17 cardiac neuroses and four behavior problems.

Men in the control group were offered the same diet and treated according to the accepted standard of rheumatic fever care. Those in the experimental group were carefully briefed as to the nature of their illness, warned about the development of neurotic tendencies, and allowed to be ambulatory as soon as their physical status permitted.

They were provided with recreational facilities and invited to participate in round-table discussions of rheumatic fever. These patients were young male adults, and no attempt is made to justify the use of this procedure in similar cases of infants and children. The report does, however, prove convincingly the values of psychiatric and occupational therapy as an adjunct to the medical treatment of chronic illness.

The application of any educational plan to care for invalid children is fraught with difficulties. Yet, for many reasons, such a plan is necessary, and facilities to make it practicable should be included in any long range planning of progressive communities. The employment of tutors or paternal supervision is seldom feasible.

The question of economic aid is another which is beyond the realm of any individual practitioner. However, the National Foundation has admirably cared for poliomyelitis victims. Progress in this direction is being made in the case of rheumatic fever, and extensions of existing agencies or the creation of new funds may conceivably provide care for other children similarly afflicted.

Discussion

Dr. Samuel F. Ravenel (Greensboro): This paper takes up a phase of pediatric care that is too often neglected by many of us. We do a great deal for the child when he is acutely ill, and then when he stumbles out of acute illness into a subacute or chronic phase we are inclined to let him get along as best he can. If we think of the possible psychiatric sequelae and implications of those acute illnesses, we will probably prevent many behavior problems.

Dr. Charles H. Gay (Charlotte): About six months ago I saw a child who had been carried by his mother for almost two years of his life, because the doctor had told her that the child had a congenital heart disease and should not be allowed to exert himself. That child was made an invalid for two years, before an examination showed that the defect was very mild. Then, after six months' guidance, that child turned into a perfectly normal, active child. The whole family situation before revolved entirely around the child, and now they are beginning to get to the stage where the child fits very nicely into the normal family pattern. At the meeting of the American Academy of Pediatrics last week in Buffalo a number of the speakers brought out the same general theme—that many patients with congenital heart lesions should not be made invalids, and can actually lead a very normal life.

The infected infant may be able to overcome tuberculous infection if the adult contact can be promptly removed. If, however, the contact remains and the baby is subjected to a constant opportunity for more infection, there is much greater likelihood of a serious, or even fatal outcome.—E. L. Kendig, M.D., and J. B. Hardy, M.D., *South. Med. Jour.*, April, 1946.

4. Robertson, H. F., Schmidt, R. E., and Feiring, W.: Therapeutic Value of Early Physical Activity in Rheumatic Fever; Preliminary Report, *Am. J. M. Sc.* 211:67-73 (Jan.) 1946.
5. Hohman, L. B.: A Psychiatric and Physical Evaluation of the Treatment of Acute Rheumatic Fever in Young Adults by a Psychiatric Ambulatory Method Compared with the Classical Bed-Rest Immobilization, *Digest Neurol. and Psychiat.*, Hartford, Connecticut, The Institute of Living, Series XV, December, 1947, pp. 698-706.

GENERAL REMARKS ON POTT'S FRACTURE

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"No part of surgery is thought to be so easy to understand, as that which relates to fractures and dislocations. Every, [even-ed.] the most inexpert and least instructed practitioner, deems himself perfectly qualified to fulfill this part of the chirurtic art: And the majority, even of these, are affronted by an offer of instruction, on a subject with which they think themselves already so well acquainted.

"This is also the opinion of a considerable part of the people. They regard bone-setting (as it is called) as no matter of science; as a thing which the most ignorant farriar may, with the utmost ease, be come soon and perfectly master of; nay, that he may receive it from his father and family as a kind of heritage." Thus wrote Percivall Pott in 1768 in his introduction to "General Remarks on Fractures and Dislocations."⁽¹⁾

What might have been true in the times of Pott is not necessarily true today. However, management of the fracture about the ankle commonly associated with his name is fraught with much difficulty. Despite its frequency and the well established principles of its treatment, avoidable complications are seen far too frequently, and it behooves all who attempt to treat this fracture to take stock occasionally in order to evaluate better their methods of treatment and their end results.

This paper is the fourth paper on the subject of fractures⁽²⁾ read by a member of our staff before this Society in the past five years. As in the past, we have selected for discussion a relatively common fracture, frequently treated by the family physician.

Classification of Fractures about the Ankle

In his original thesis Pott described an

injury consisting of a fracture of the fibula, a partial dislocation of the ankle, and a laceration of the ligaments that fasten the tibia to the astragalus and to the os calcis. Cotton⁽³⁾ and others have added new descriptions and classifications of various fractures about the ankle, and there are numerous names associated with the more common ankle fractures. However, all can be classified as abduction or adduction fractures with or without dislocation. The dislocation may be to either side, forward or backward. The fracture may involve only one malleolus, or it may be bimalleolar or trimalleolar. (The posterior lip of the articular surface of the tibia is now referred to as the posterior malleolus of the tibia.)

Pathology

Little has been or can be added to Pott's original description of the pathology, and of the principles of the treatment of these fractures. A part of his description is therefore quoted:

"A case [fracture—ed.] which, according to the general manner of treating it, gives infinite pain and trouble both to the patient and surgeon, and very frequently ends in the lameness and disappointment of the former, and the disgrace and concern of the latter—I mean the fracture of the fibula attended with a dislocation of the tibia. Whoever will take a view of the leg of a skeleton, will see that although the fibula be a very small and slender bone, and very inconsiderable in strength, when compared with the tibia, yet the support of the lower joint of that limb (the ankle), depends so much on this slender bone, that without it the body would not be upheld, nor locomotion performed, without hazard or dislocation every movement . . . This lower extremity of the fibula has, in its posterior part, a superficial sulcus for the lodgment and passage of the tendons of the peronei muscles, which are tied down by strong ligamentous capsulae, and have their action so determined from this point or angle, that the sequence of external force, must necessarily have considerable effect on the motions they are designed to execute, and consequently distort the foot."

" . . . it will obviously appear to every one who examines the ankle that the support of the body, and the due and proper use and execution of the office of the joint of the ankle, depend almost entirely on the perpendicular bearing of the tibia upon the astragalus, and on its firm connexion with the fibula. If either of these be perverted or prevented, so that the former bone is forced from its just and perpendicular position on the astragalus; or if it be separated by violence from its connexion with the latter, the joint of the ankle will suffer a partial dislocation internally; which partial dislocation cannot happen without not only a considerable extension, or perhaps laceration of the bursal ligament of the joint, which is lax and weak, but a

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Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

1. Earle, J.: *Chirurgical Works of Percivall Pott, F.R.S. Surgeon, St. Bartholomew's Hospital, a new edition with his last corrections.* London, Wood & Sines, 1808, v. 1.
2. (a) Baker, Lenox D. and Schaubel, Howard J.: *Operative Treatment of Fracture of the Patella*, North Carolina M.J. 1:382-384 (Sept.) 1943. (b) Raney, R. Beverly: *The Treatment of Fractures of the Humerus with the Hanging Cast*, North Carolina M. J. 6:88-92 (Feb.) 1945. (c) Baker, Lenox D. and Schaubel, Howard J.: *Complications of Colles' Fractures*, North Carolina M. J. 7:457-462 (Sept.) 1946.

3. (a) Cotton, F. J., Tr. Orthopedic Section, American Medical Association, 1914. (b) Cotton, F. J.: *Dislocations and Joint Fractures*, ed. 2, Philadelphia, W. B. Saunders & Company, 1924.



Fig. 1. Pott's original illustration of the fracture now known by his name⁽¹⁾.

laceration of those strong tendinous ligaments, which connect the lower end of the tibia with the astragalus and os calcis, and which constitute in great measure the ligamentous strength of the joint of the ankle. This is the case, when, by leaping or jumping, the fibula breaks in the weak part already mentioned; that is, within two or three inches of its lower extremity. [Fig. 1] When this happens, the inferior fractured end of the fibula falls inward toward the tibia, that extremity of the bone which forms the outer ankle is turned somewhat outward and upward, and the tibia having lost its proper support, and not being of itself capable of steadily preserving its true perpendicular bearing, is forced off from the astragalus inwards, by which means the weak bursal, or common ligament of the joint is violently stretched, if not torn, and the strong ones, which fasten the tibia to the astragalus and os calcis, are always lacerated; thus producing at the same time a perfect fracture and a partial dislocation, to which is sometimes added a wound in the integuments, made by the bone at the inner ankle. . . . When this accident is accompanied, as it sometimes is, with a wound of the integuments of the inner ankle, . . . it not infrequently ends in a fatal gangrene . . . But in its most simple state, unaccompanied with any wound, it is extremely troublesome to put to rights, still more so to keep it in order, and unless managed with address and skill, is very frequently productive both of lameness and deformity ever after."

Treatment

In outlining treatment, Pott condemned any efforts at reducing the fracture with the limb extended at the knee and stated,

"This extension occasions the difficulty in reduction, and the difficulty in keeping it reduced . . . but if the position of the limb be changed . . . with the knee moderately bent, the muscles forming the calf of the leg, and those which pass behind the fibula and under the os calcis, are all put into a state of relaxation and non-resistance, all this difficulty and trouble do in general vanish immediately; the foot may easily be placed right, the joint reduced, and by maintaining the same disposition of the limb, every thing will in general succeed very happily, as I have many times experienced."

As has already been said, little has been or can be added to Pott's description of this fracture and of the principles of its treatment. However, the failure to perform properly certain details in the reduction and fixation of Pott's fracture may lead to "lameness and disappointment."

The time allotted for presenting this paper does not allow a detailed description of the signs of Pott's fracture, nor a description of all the accepted methods of reduction. The following principles may be stated as holding true regardless of the method used:

Roentgenographic examination

Roentgenograms should be made of all injured ankles. In addition to the usual anteroposterior and lateral films, oblique views should be included in order to visualize diastasis.

Anesthesia

General or spinal anesthesia is preferable to local anesthesia.

Reduction and application of cast

Traction in the line of deformity to realign the fragments is the first and most important force to be applied. This traction should be applied with the patient's knee flexed to a 90 degree angle and with counter traction applied over the posterior aspect of the thigh just above the knee by an assistant, by a fixed strap, or (preferably) by the end of the table. Counter traction thus applied allows for relaxation of the musculature of the leg.

If anatomic restoration is to be secured, manipulation should be directed toward bringing the astragalus into alignment with the tibia, realigning the fracture fragments, restoring the joint mortice and reducing the fracture of the posterior malleolus or lip of the tibia, if such a fracture is present. When the distal fragments and the astragalus are reduced, traction must be maintained with a forward force to prevent recurrence of backward dislocation. The foot should be placed at an angle of approximately 90 degrees to



Fig. 2 (A). With the patient anesthetized and the knee of the injured extremity flexed over the edge of the table, the operator applies traction. (B) When the cast is completed about the ankle and leg, it is extended out over the forefoot. (C) An additional plantar splint may be applied and molded to support the longitudinal and metatarsal arches. (D) A section of an automobile tire with good tread makes a satisfactory weight-bearing appliance.

the leg, or in slight plantar flexion. Care must be taken not to overdorsiflex the ankle, as the astragalus (which is wider in the front than in the back) will force the malleoli apart, thus spreading the ankle mortice⁽⁴⁾.

Figure 2a shows the position of the operator for reduction of an abduction fracture. One hand grasps the heel, with the thumb placed medially and just above the inner malleolus. The other hand grasps the lateral malleolus and the foot. Traction is applied and the astragalus and the foot are forced inward with the outer hand, but the foot is not supinated. The astragalus is aligned with the tibia, and the os calcis with the foot in the mid position.

Following reduction, the forefoot may be supported by resting the head of the fifth metatarsal lightly on the operator's knee, or an assistant may support the forefoot. A long, thoroughly soaked wet plaster splint is then placed in sugar-tong or stirrup fashion about the leg, the ankle, and the posterior part of the foot. This plaster slab should be well molded and held with plaster bandages (fig. 2b).

We use the unpadded cast. If the unpadded cast is not used, the plaster stirrup should be put on unpadded; a light layer of glazed cotton may then be wrapped on in a circular fashion before applying the circular plaster bandage. It has been our experience that, with proper precautions and care, less circulatory embarrassment, fewer pressure sores, and better fixation result with the unpadded cast than with the padded cast.

After the sugar-tong splint has been well molded, an additional plantar splint may be applied and molded to support the longitudinal and metatarsal arches (fig. 2c). When completed, the dorsal surface of the cast should extend to the web spaces of the toes. The plantar surface should extend to the tips of the toes.

If the fracture has been properly reduced, and the foot has been put into an anatomic position, weight-bearing forces will not disturb the reduction. The active use of the limb stimulates union and prevents circulatory stasis, atrophy, and stiffness. A section of an automobile tire with good tread makes a satisfactory weight-bearing appliance. The tread is applied in weight-bearing alignment, with a firm block of sponge rubber between it and the cast (fig. 2d). The tread and the sponge rubber are held in place by an additional circular plaster of paris bandage. Regardless of the type of cast applied, either padded or unpadded, any sign of circulatory embarrassment, no matter how mild, is sufficient reason to split the cast.

Treatment following reduction

In all instances, post-reduction x-rays should be made to be sure that the ankle mortice has been restored, that the fibula is in normal alignment, and that the dislocation is reduced. In the anteroposterior film, the superior articular surface of the astragalus must be in anatomic relationship with the articular surface of the tibia. In the oblique film the lower tibiofibular articulation must be in normal relationship. In the lateral

1. Ashhurst, A. P. C. and Crossan, E. T.: Prognosis and Treatment of Fractures of the Tibia and Fibula. *Tr. Am. Surg. Assoc.* 41:594, 1923.

films, the superior articular surface of the astragalus must be in contact with the anterior portion of the articular surface of the tibia.

A posterior fragment from the lip of the tibia, if it includes an appreciable amount of the articular surface, should be brought into normal relationship. Otherwise the position of this fragment is not particularly important. It will often be impossible to correct its slight upward displacement, but as long as it is displaced away from the joint rather than into the joint, exact reduction is unimportant.

Immobilization should be continued until bony union has occurred. This usually requires at least ten weeks. On removal, if the fracture has been treated with a weight-bearing cast, the ankle and the foot can be taken through approximately a normal range of motion. Following removal of the cast a jelly bandage will usually be found of benefit in preventing recurrent swelling. Such support should be continued for several weeks if necessary.

The patient or those responsible for the patient should be supplied with instructions for observing signs of circulatory changes. A satisfactory fracture instruction sheet is as follows:

DUKE HOSPITAL
Durham, N. C.

ACCIDENT DEPARTMENT INSTRUCTIONS TO FRACTURE CASES

It is important that the circulation of blood in the fractured limb be watched closely. In order to watch the circulation, the fingers or toes of the fractured limb have been left exposed.

Keep the injured part elevated. If the exposed parts become **BLUISH, SWOLLEN, COLD OR NUMB**, return **AT ONCE** to the hospital. Otherwise, **PERMANENT INJURY MAY RESULT**.

Return to the hospital tomorrow as instructed by the doctor who set your fracture, so that he can inspect the cast, circulation, etc. Following this, come to the Fracture Clinic as instructed on Friday at 8:30 A.M. until discharged.

I have received a copy of the above instructions which have been explained to me and are clear as to details.*

Signed.....

*Explain and give one copy of instructions to the patient and attach a signed copy to the record.

The Hazards of Open Reduction

Unfortunately in the past few years several articles have appeared in the literature recommending open reduction and some type of internal fixation in fractures about the ankle. Figure 3 is a good example of the

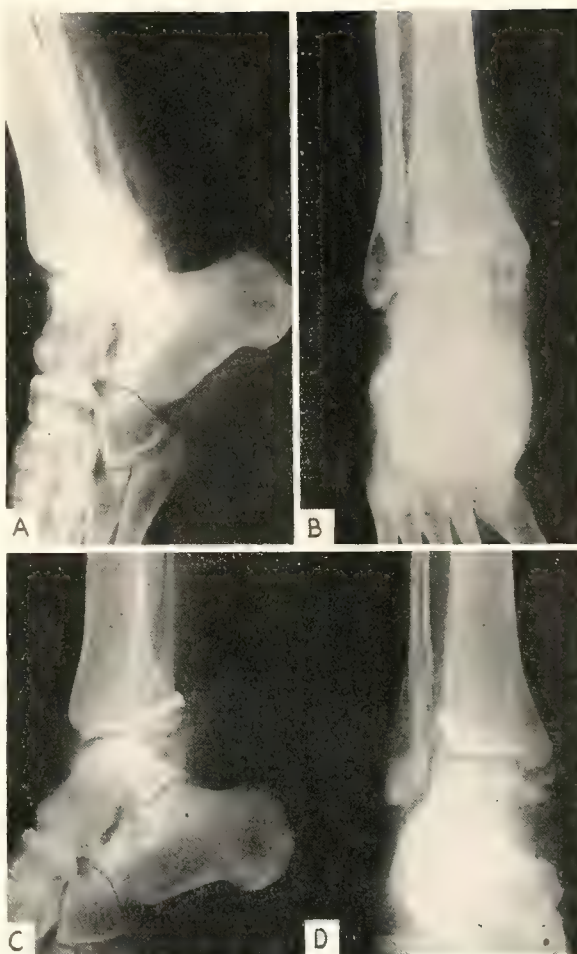


Fig. 3. (A) Lateral view of a trimalleolar fracture with a small posterior fragment and very little interference with the weight-bearing surface of the tibia. (B) Anteroposterior view showing slight lateral displacement of the astragalus and fracture of the medial and lateral malleoli. (C) An open reduction has been done, with the screw inserted through the posterior fragment of the tibia. (D) There is non-union of the malleolus, and the joint mortice has not been restored. The astragalus shows lateral luxation, and the position of the posterior fragment has not been changed.

foolhardiness of such measures. In this instance, the surgeon has done an open reduction and has inserted a screw through a posterior fragment of the tibia. Failure to reduce such a fracture by conservative measures will usually be followed by the same failure when surgery is resorted to. In this case there is nonunion of the medial malleolus, and the joint mortice has not been restored. In spite of the open reduction for the posterior fragment, its position has not been changed. Compare figure 3 with figure 4, in which relatively the same fracture has

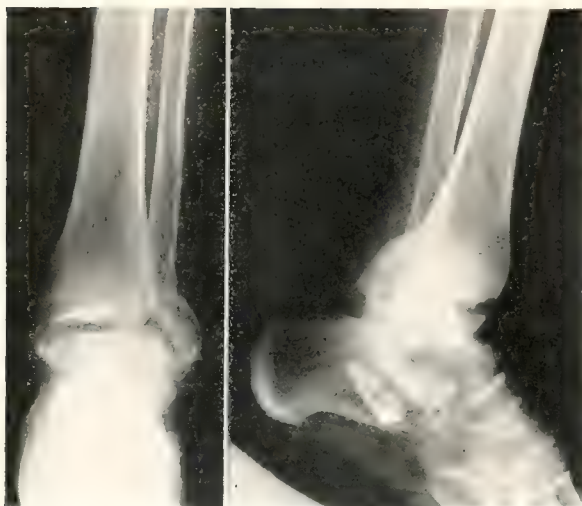


Fig. 4. (A) Preoperative film of a fracture similar to the one illustrated in figure 3, but with more comminution of the lateral and medial malleoli and a greater posterior luxation.

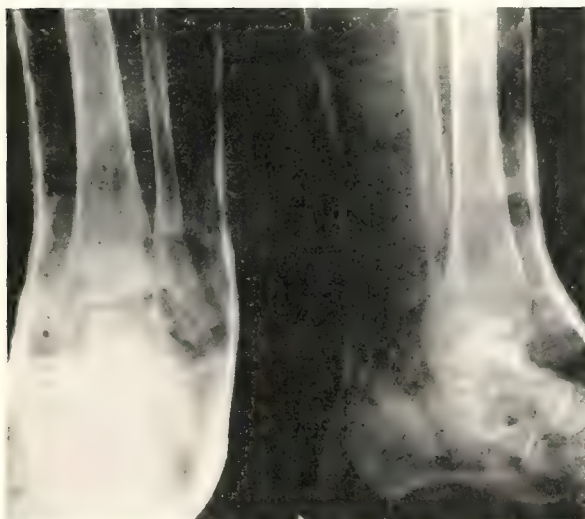


Fig. 4 (B). Conservative therapy consisting of manipulation with the patient anesthetized and the knee flexed at a 90 degree angle has restored satisfactory alignment to all fragments and has reduced the lateral luxation of the astragalus.

occurred with severe comminution of the lateral malleolus. By traction and manipulation all fracture fragments were aligned and the luxation was reduced; the posterior fragment is in a satisfactory position, and the joint mortise is restored.

Treatment of Uncomplicated Malleolar Fractures

Malleolar fractures without luxation of the joint and without displacement of the fragments should be treated symptomatically. Frequently procaine injection followed



Fig. 5. A Delbet cast.

by heavy adhesive strapping or by the application of a Delbet cast⁽⁵⁾, preferably the latter, gives excellent end results and allows the patient to dress in a customary fashion and to walk with a normal gait.

A Delbet cast is prepared of two heavy plaster splints placed laterally and medially on the leg and folding back on themselves for increased strength at the foot and malleolar areas. Felt pads are used over the malleoli and sides of the foot, and a circular felt pad is used about the top of the cast. The splints are wrapped on snugly by a circular bandage. After setting, the circular bandage is trimmed about the foot as in figure 5. This cast gives good lateral and medial stability at the subastragalar joint without interfering with flexion and extension of the ankle.

Conclusions

(1) Pott's fracture is a common fracture, which "is extremely troublesome to put to right, still more so to keep . . . in order."

(2) With the knee flexed and with strong traction applied, proper manipulation can produce anatomic reduction.

(3) Reduction, once secured, should be maintained with the ankle at an angle of 90 degrees or in slight plantar flexion and with the foot in a mid position between supination and pronation (the weight-bearing position).

(4) With adequate reduction and proper fixation, early weight bearing is not contraindicated.

(5) A Pott's fracture, when not properly reduced and so held, "gives infinite pain and trouble both to the patient and surgeon, and

5. Delbet, Pierre: *Methode de Traitement des Fractures*, Paris, F. Alcan, 1916.

very frequently ends in the lameness and disappointment of the former and the disgrace and concern of the latter."

Discussion

Dr. M. A. Pittman (Wilson): After reduction of a malleolar fracture (which we usually do under the fluoroscope with the knee and the foot at right angles) it has been our routine to apply a sugar-tong cast to the knee, then reinforce it and put a plaster boot or plaster cast to mid-thigh. I believe that better immobilization is provided with a cast above the knee for the first two weeks at least. At the end of two weeks this cast can be taken off and a cast to the knee applied. Under the fluoroscope, the malleoli can be better molded at that time. There is enough callus formation so that the fragments won't have a tendency to slip, and some of the swelling has subsided. At that stage of the game a pad and a walking splint, or the weight-bearing splint that has been described, is put on. We then leave this cast on six weeks. At the end of six weeks we remove the cast and put on an elastic stocking.

In my opinion it is just as important to treat the fracture the last six weeks as to reduce it in the first place. Without passive and active motion and some form of physiotherapy, ankylosis of the joint and stiffness of the knee will result. We have been using a simple method of heat therapy and exercise which some of you have probably heard of. After the first six weeks we have the patient buy a gallon or two of heavy cylinder oil and put this in a bucket. We have found that the skin will tolerate more heat from the cylinder oil than from water. At night, before retiring, the patient heats the oil to skin tolerance, and then puts his foot in the bucket. A rubber ball or sponge is also placed in the bucket, and the patient pedals that at least five hundred times, also using abduction and adduction. The heat appears to relieve the swelling, and I believe that this procedure does a lot of good.

The importance of sedentary hobbies—There is commonly no coincidence between the calendar age and the biologic age of an individual. There are many influences which determine this disparity, and among them are the forces of heredity, the manner of life and habits, temperament, the fortunes and misfortunes of human existence and the individual's ability to adapt himself to inevitables. It is a well-recognized fact that cardiovascular disease is remarkably prevalent among physicians, and it is almost a daily experience to witness a career suddenly and tragically interrupted or greatly modified by the unanticipated occurrence of this kind. Even when survival eventuates, the long convalescence and the prolonged period of limited rehabilitation frequently become a veritable nightmare.

There seems, then, to be little valid argument against the key premise of my thesis that physicians and others ought to embrace sedentary hobbies, relatively early in life. Potential hobbies are too numerous to mention, and must be selected primarily by the individual on the basis of interest and adaptability. Hobbies should be of a constructive nature, so that the satisfaction of accomplishment can be enjoyed. They should emphasize the use of the hands as well as the mind. A mind that is not constructively employed because of lack of interests soon retrogresses and causes decadence of spirit, morale and intelligence.—F. A. Willius, *The Necessity and Importance of Adoption of Sedentary Hobbies*, Proc. Staff Meet., Mayo Clinic 23:413 (Sept. 1) 1948.

CHANGES IN GASTRIC pH FOLLOWING THE ADMINISTRATION OF FRUIT JUICE TO PATIENTS WITH PEPTIC ULCER

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and

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The general principles of the dietary treatment of peptic ulcer are well established. In 1935, Brown advocated a diet consisting of an increased number of feedings high in caloric value which are non-irritating, non-stimulating to acid secretions, and capable of combining with hydrochloric acid in considerable amounts. Ivy, in 1946, restated these principles and emphasized the importance of buffering the acid secretions of the stomach by frequent small feedings of a highly nutritious diet which would utilize the inhibitory action of fat on gastric secretions and emptying.

In practice, the application of these principles may be difficult. Patients often tire of the bland diet. The buffering effect on acid secretions may prove to be brief, and may be followed by an acid rebound. The injudicious use of a restricted, poorly balanced diet in the management of patients with peptic ulcer often results in varying degrees of malnutrition⁽¹⁾. Many patients with peptic ulcer limit their diet voluntarily, even before being seen by a physician. They are particularly apt to omit citrus fruits and juices because of the fear that they will aggravate their symptoms. As a consequence, plasma levels of ascorbic acid in such patients have been found to be significantly lower than those in control patients of similar economic status but without peptic ulcer⁽²⁾.

The general belief that fruit juices are "acid," and that they aggravate the symptoms of peptic ulcer unquestionably has limited their use. When they are given to amplify the diet of ulcer patients, they are often administered between meals as supplementary nutrition.

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1. Riggs, H. E., Reinholt, J. G., Boles, R. S., and Shore, P. S.: The Diet and Chronic Peptic Ulcer, *J.A.M.A.* 124: 639-641 (Mar. 4) 1944.
2. Crescenzo, V. M. and Cayer, D.: Plasma Vitamin C Levels in Patients with Peptic Ulcer, *Gastroenterol.* 8:754-761 (June) 1947.

In the following study the gastric response to fruit juice was compared with that obtained following the administration of milk.

Selection of Patients and Method of Study

Fifty-one patients on the medical service of the North Carolina Baptist Hospital were studied. They were divided into three groups as follows:

Group 1 (table 1) consisted of 19 patients with active peptic ulcers. Five of the patients were found to have gastritis, and 2 had advanced degrees of pyloric obstruction complicating their disease.

Group 2 (table 2) consisted of 14 patients without demonstrable organic gastrointestinal disease whose fasting gastric secretions contained free hydrochloric acid.

Group 3 (table 3) consisted of 18 patients without free hydrochloric acid in the fasting specimen. Only 4 patients had persistent achlorhydria following a test meal. Seven patients had organic gastrointestinal disease

—pancreatic cancer, gastritis, lymphosarcoma, adenocarcinoma, or syphilis of the stomach.

The plan of study was the same for all patients. On the second or third day after admission a Levin tube was passed and the fasting gastric contents were aspirated. The tube was then removed and the patient was given a standard breakfast from which fruit juices and milk were excluded. A second aspiration was done two hours later, and the tube was left in place. One hundred and fifty cubic centimeters of freshly prepared, undiluted orange juice⁽³⁾ were introduced into the stomach through the tube, and the gastric contents were aspirated as completely as possible thirty and sixty minutes later. Immediately following the sixty-minute aspiration, 150 cc. of whole milk⁽⁴⁾ was given. Specimens were again withdrawn

3. Average pH = 3.65.

4. Average pH = 6.65.

Table 1
Group 1 (Peptic Ulcer)

Case No.	Age	Sex	Diagnosis	Fasting	pH of Gastric Contents					Remarks
					2 Hours after Break-fast	½ Hour after Orange Juice	1 Hour after Orange Juice	½ Hour after Milk	1 Hour after Milk	
1	44	M	Duodenal ulcer	1.69	1.70	1.60	1.51	2.85	1.63	
2	56	M	Duodenal ulcer	1.61	1.58	1.40	1.40	2.68	1.57	Discomfort after orange juice
3	39	M	Duodenal ulcer	1.70	1.70	1.53	1.50	2.37	1.90	Pain after orange juice
4	45	F	Duodenal ulcer		2.30	3.40	2.23	4.30	2.80	Discomfort after orange juice
5	30	M	Duodenal ulcer		1.80	3.20	1.55	3.70	1.69	Discomfort after orange juice
6	39	M	Duodenal ulcer	1.51	1.60	2.47	1.55	3.88	2.41	
7	43	M	Duodenal ulcer		1.99	2.72	1.71	4.35	1.93	
8	40	M	Duodenal ulcer	1.89	1.93	1.86	1.60	2.85	1.80	
9	37	M	Duodenal ulcer	6.60	1.78	1.70	1.72	2.38	1.85	Pain after orange juice. Mucus in fasting specimen
10	44	M	Duodenal ulcer with hemorrhage	3.40	1.60	3.27	1.77	2.10	1.52	Mucus in fasting specimen
11	26	M	Duodenal ulcer, pyloric stenosis	1.72	1.90	2.01	1.56	2.31	2.00	Discomfort after orange juice
12	55	M	Duodenal ulcer	1.97	1.53	2.21	1.49	2.18	2.34	
13	37	F	Duodenal ulcer	3.15	2.50	3.10	2.72	2.99	2.87	Mucus in fasting specimen
14	25	M	Duodenal ulcer	2.60		1.79	1.41	2.38	1.75	
15	56	M	Duodenal ulcer	2.55		1.48	1.40	4.11	1.43	
16	39	M	Gastric ulcer	2.38	2.20	2.40	1.67	3.68	3.42	
17	34	M	Prepyloric ulcer	4.86		3.29	1.63	5.29	1.72	Mucus in fasting specimen
18	31	M	Duodenal ulcer	6.80		3.91	2.20	4.40	2.57	Mucus in fasting specimen
19	60	M	Duodenal ulcer with obstruction	1.90	2.11	1.79	1.68	2.32	1.88	Pyrosis after orange juice
Mean pH				2.90	1.88	2.38	1.70	3.26	2.06	

at thirty- and sixty-minute intervals. The volume of each gastric specimen was noted, the *pH* determined, and the free and total acidity titrated. It was found that the presence of weak organic acids and salts in fruit juice resulted in unreliable "free acid" end points when mixtures of fruit juice and gastric juice were titrated. Therefore, only the results of the *pH* determinations were used in the analysis of the basic data. The Beckman *pH* meter with glass electrodes was used in all the *pH* determinations. Duplicate determinations had a variation of less than ± 0.02 .

Results

Group 1

The average *pH* value of the fasting gastric specimens for the entire group of patients with peptic ulcer was 2.90. This relatively high figure was attributed to the presence of large amounts of mucus and an increased *pH* in the fasting specimens of 5 pa-

tients in this group. The *pH* for the remaining 14 patients, including 2 with pyloric obstruction, ranged from 2.60 to 1.51, the mean being 1.96.

Two hours after breakfast the average *pH* had fallen to 1.88 (chart 1). Following the administration of orange juice (table 4), slight buffering could be demonstrated at the end of thirty minutes in 9 cases (47 per cent). At the end of sixty minutes the *pH* of the gastric specimen had fallen below the fasting and after-breakfast levels in 17 patients (89 per cent).

Following the administration of milk a marked buffering effect was noted in 18 of the patients (94 per cent); at thirty minutes the average *pH* for the entire group was 3.26. At the end of one hour the average *pH* for the group was 2.06, and 11 of the patients (58 per cent) had *pH* values below their fasting levels. The mean figure of 2.06 however, was significantly higher than the

Table 2

Group 2 (Patients with free acid in fasting specimen and no organic gastrointestinal disease)

Case No.	Age	Sex	Diagnosis	Fasting	<i>pH</i> of the Gastric Contents					Remarks
					2 Hours after Break-fast	1/2 Hour after Orange Juice	1 Hour after Orange Juice	1/2 Hour after Milk	1 Hour after Milk	
1	46	F	Pelvic disease	2.15		2.09	1.72	2.88	2.68	
2	36	M	Neoplasm of brain stem	2.20	2.00	2.80	2.73	3.86	3.78	
3	42	F	Functional gastrointestinal disturbance	2.35	2.99	2.08	2.52	5.59	4.90	
4	63	F	Functional gastrointestinal disturbance	2.09	4.20	3.65	3.44	4.65	3.64	Burning after orange juice
5	44	M	Upper respiratory infection	2.42		2.37	1.60	3.45	2.20	
6	52	F	Functional gastrointestinal disturbance	2.10	2.19	2.04	1.80	3.40	3.00	
7	27	M	Essential hypertension	2.01	2.11	1.95	1.88	1.85	1.82	
8	45	F	Menopause	2.12	4.30	2.39	2.30	4.57	4.30	
9	28	M	Functional gastrointestinal disturbance	2.38	2.41	2.90	2.25	2.35	1.87	
10	38	M	Functional gastrointestinal disturbance	1.72	1.92	2.22	1.55	2.81	1.80	
11	54	F	Non-toxic nodular goiter	2.11	1.38	2.18	1.60	2.51	2.06	
12	28	F	Psychogenic vomiting	2.00		2.66	1.80	6.70	1.72	
13	28	M	Functional gastrointestinal disturbance	1.69	2.20	2.89	2.11	3.41	3.89	
14	38	F	Constitutional inadequacy	3.08		3.12	2.70	5.00	4.88	
Mean <i>pH</i>				2.17	2.57	2.52	2.14	3.79	3.04	

Table 3
Group 3 (Patients with fasting achlorhydria)

Case No.	Age	Sex	Diagnosis	Fasting	pH of the Gastric Contents					Remarks
					2 Hours after Breakfast	1/2 Hour after Orange Juice	1 Hour after Orange Juice	1/2 Hour after Milk	1 Hour after Milk	
1	37	M	Lymphosarcoma of stomach	8.32	7.60	4.07	2.29	5.87	4.29	
2	44	F	Urethral polyp	7.42		3.80	3.62	6.10	6.15	Achlorhydria
3	21	F	Gastrointestinal hemorrhage, site unknown	7.29		2.52	1.68	4.18	3.48	
4	32	F	Diabetes mellitus	5.93	3.58	3.59	3.31	4.95	4.32	Achlorhydria
5	34	M	Psychoneurosis	7.19	2.32	2.18	1.81	4.76	3.62	
6	44	F	Gastrointestinal neurosis	7.20	2.00	3.75	3.39	4.70	3.50	
7	61	M	Arteriosclerotic heart disease	7.31	2.69	3.25	2.25	4.15	1.95	
8	22	F	Rheumatoid arthritis	6.88	2.20	3.18	2.70	5.30	2.10	
9	49	M	Acute gastritis	7.61	7.90	4.28	7.01	7.04	7.78	Achlorhydria
10	26	M	Gastric resection	6.39		3.92	4.98	5.29	5.50	Achlorhydria
11	30	M	Gastritis (chronic)		6.50	2.70	2.60	6.70	4.40	
12	53	M	Carcinoma of pancreas	4.53	4.30	3.60	1.79	4.60	4.27	
13	52	M	Gastro-duodenitis	3.39	2.16	2.31	1.48	2.99	1.53	Pain after orange juice
14	30	M	Anxiety state	6.67	2.11	2.72	2.37	4.73	2.15	
15	40	M	Syphilis	3.42		2.60	2.10	3.20	1.85	
16	34	F	Syphilis	7.30		3.00	1.81	4.91	3.71	
17	29	M	Gastritis, chemical	6.90		3.10	1.96	4.18	2.31	
18	42	M	Carcinoma of stomach	3.48	3.66	2.90	2.84	3.38	3.02	
Mean pH				6.31	3.92	3.19	2.78	4.84	3.66	

average pH one hour after the administration of orange juice.

Group 2

In this group of 14 patients without evidence of gastrointestinal disease, whose fasting specimens showed free hydrochloric acid, little change was noted in the pH values thirty minutes after the administration of orange juice. The mean for the group was 0.05 lower than the value before the orange juice was given. The stimulating effect of orange juice on the gastric secretions was more pronounced at the end of sixty minutes, at which time the mean pH for the group had fallen to 2.14, and 9 of the patients (64 per cent) had an increase in gastric acidity. Thirty minutes following the administration of milk the mean pH value for the group was 3.79; at the end of one hour this had fallen to 3.04.

Group 3

In this group of patients whose fasting gastric analysis showed no free hydrochloric acid, the initial pH of 6.31 fell to a mean of

3.92 two hours after breakfast. Thirty minutes after the administration of orange juice the mean value was 0.46 below the pH of the orange juice, and 0.73 below the mean of the previous specimens. After one hour 12 patients (67 per cent) had pH values below the fasting and after-breakfast levels. The mean of 2.78 for the entire group one hour after the administration of orange juice indicates a definite stimulating effect on gastric secretion.

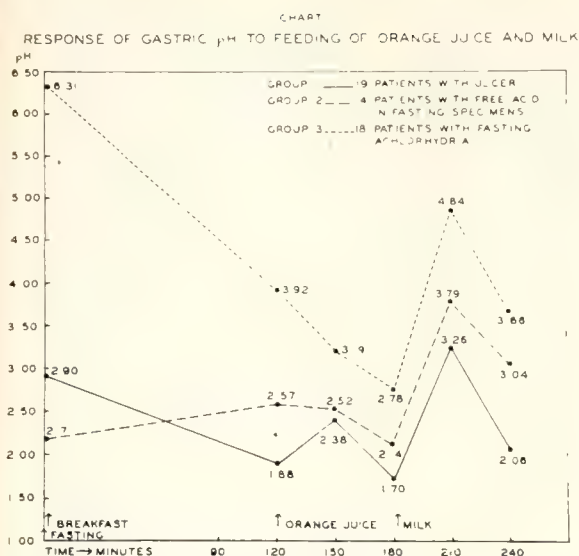
Following the administration of milk, only 3 patients (17 per cent) had pH values below 4.00 at the end of half an hour. After one hour, 11 patients (61 per cent) still showed evidence of buffering of the gastric secretions. The mean pH values at thirty and sixty minutes were 4.84 and 3.66.

The pH values for all groups following the milk feeding were closely parallel.

Statistical analysis⁽⁵⁾

The "T" test was used to judge the signi-

5. Statistical analyses were done by Paul R. David, Department of Medical Genetics, Bowman Gray School of Medicine.



ficance of the differences between the pH values obtained one hour after the administration of orange juice and those found one hour after the milk feeding. In group 1 (patients with peptic ulcer) the value of "T" (4.18) for 18 degrees of freedom corresponds to a significance level of $P < .01$.

Similar analysis in group 2 (free acid controls) gave a "T" value of 3.34, which for 13 degrees of freedom is equal to a significance level of $P < .01$.

When the difference in mean pH values obtained immediately before and one hour after orange juice is compared with the difference in those obtained before and one hour after milk, the data are statistically significant, with a level of $P < .01$ for each of the three groups of patients.

Discussion

It is generally recognized that the use of a bland diet which is relatively non-stimulating, is of high buffering ability, and does not increase intestinal motility is a valuable adjunct in the medical management of peptic ulcer. The importance of providing the necessary dietary essentials to patients who are being maintained on therapeutic diets over considerable periods of time has been stressed by many clinical and laboratory studies. These have demonstrated that a deficiency of vitamin C is frequent in such patients. This appears to be due primarily to a reluctance on the part of both physician and patient to include in such diets citrus fruits, juices, and green vegetables, which provide the major sources of supply of this

Table 4

The Response of Gastric Acidity to Orange Juice and Milk at Thirty- and Sixty-Minute Intervals

Group	Time	Orange Juice		Milk	
		Increased*	Decreased*	Increased*	Decreased*
1. 19 ulcer patients	30 min.	9	10	1	18
	60 min.	17	2	11	8
2. 14 patients with free acid (no demonstrable lesions of gastrointestinal tract)	30 min.	5	9	2	12
	60 min.	9	5	4	10
3. 18 patients with fasting achlorhydria	30 min.	7	11	3	15
	60 min.	12	6	7	11

* Secretion of free acid and pH values below fasting levels or after-breakfast levels.

** pH values above fasting levels or after-breakfast levels.

vitamin. Eberhard⁽⁶⁾ found that the exclusion of fruit juices from the diet was followed by distinct subjective relief in ulcer patients with hyperacidity and hypersecretion, and he supplied the vitamin-C requirements of such persons by the administration of oral ascorbic acid.

Claytor, Smith and Turner⁽⁷⁾ reported that orange-juice test meals in a series of 20 patients had a stimulating effect on the gastric secretions, but they drew no conclusions concerning the place of fruit juices in the diet of patients with peptic ulcer.

Dimmler, Power and Alvarez⁽⁸⁾ studied the effects of orange juice *in vitro* by mixing it with gastric juice obtained one hour after the Ewald test meal. They found that it "lowered high gastric acidities and raised low gastric acidities." When orange juice was given to two normal persons, no change was noted in the pH of the gastric specimens withdrawn after seventy-five and one hundred and fifty minutes.

Kugelmass⁽⁹⁾ gave fruit juices to children and found that the pH of fractional aspirations taken at fifteen and thirty minutes corresponded to that of the fruit juice ingested.

Greenberg and Haggard⁽¹⁰⁾ studied the effects of fruit juices and water on gastric

- Eberhard, H. M.: A Comparison of the Ewald Test Meal and the Orange-Juice Test Meal, *Rev. Gastroenterol.* 10: 154-157 (May-June) 1943.
- Claytor, F. W., Smith, W. L., and Turner, E. L.: Effect of Orange Juice on Gastric Acidity, *Am. J. Digest. Dis.* 8:43-44 (Feb.) 1941.
- Dimmler, C., Jr., Power, M. H., and Alvarez, W. C.: Effect of Orange Juice on Gastric Acidity, *Am. J. Digest. Dis.* 5:86-87 (April) 1938.
- Kugelmass, I. N.: Acid-Base Value and Assimilability of Fruit Juices, *Am. J. Digest. Dis.* 2:242-243 (June) 1935.
- Haggard, H. W., and Greenberg, L. A.: Influence of Certain Fruit Juices on Gastric Function, *Am. J. Digest. Dis.* 8:163-170 (May) 1941.

acidity during active digestion in normal persons. They found that the addition of water or fruit juices to standardized meals made no appreciable difference in the pH of the gastric juice. The stimulating effect of fruit juices on the gastric secretions appears to be neutralized when they are given with other food.

These reports suggest that the gastric response following the administration of orange juice is variable. In the present study several points of interest were noted.

Response after fruit juice

As might be anticipated from the pH of the orange juice, buffering of gastric acidity was noted in 47 per cent of the patients studied. The fact that many patients complain of discomfort following the ingestion of citrus fruit juices alone, however, suggests that the buffering action of the fruit juice is of short duration. In 90 per cent of the ulcer patients, the orange juice had a stimulating effect on the gastric secretions, and at the end of one hour the pH values in these persons fell below fasting and after-breakfast levels. Additional tests with tomato juice in 2 ulcer patients produced the same response as did the orange juice, even though tomato juice has the highest pH of the commonly used juices.

While orange juice and tomato juice can not be relied upon to exert a buffering effect even for a brief duration, the stimulating effect of these juices on the gastric secretion is relatively constant. This effect can be modified if they are given with regular meals. Other methods for the administration of fruit juices have been suggested. Ehrman⁽¹¹⁾ advocated the addition of egg white or pectin powder to the orange juice, and the conversion of tomato juice into cream of tomato soup by the addition of light cream or milk. The pH of fruit juices (table 5) cannot be relied upon as a guide to their buffering effect. The buffering action of all juices, even tomato juice, is brief and inconstant, and they all have a subsequent stimulating effect on gastric acidity.

All of the thirty-minute gastric specimens were found to contain orange juice. At the end of sixty minutes none of the specimens showed visible evidence of orange juice except in those cases of peptic ulcer complicated by some degree of obstruction. The

Table 5

pH Values of Various Fruit Juices and Milk*

Fruit Juices	pH
Freshly prepared, undiluted	
Lemon	2.29
Grapefruit	3.12
Orange	3.75
Canned or bottled	
Grapefruit	2.98
Grape	3.00
Apple	3.24
Pineapple	3.42
Orange	3.62
Prune	3.70
Tomato	4.18
Whole Milk	6.65

* pH determinations were made on samples of various fruit juices and milk supplied to patients in the North Carolina Baptist Hospital.

subjective response to orange juice was variable. Seven of the ulcer patients complained of epigastric discomfort, burning, or pain following its ingestion. The remaining 12 ulcer patients had no subjective complaints, although a marked increase in gastric acidity could be demonstrated following its administration in all except two.

Response after milk

Ninety-four per cent of the ulcer patients showed a decrease in gastric acidity thirty minutes following the administration of milk. At the end of one hour only 42 per cent of the group still showed evidence of buffering. The buffering action of milk was more prolonged than that of fruit juice, but was still relatively short. The difference between the findings after the administration of fruit juice and milk can not be attributed to an exhaustion phenomenon following repeated aspirations, since the secretion of gastric juice has been shown to be continuous in human beings. The fact that more than half the patients with ulcer showed an increase in gastric acidity at the end of one hour emphasized the necessity of using hourly feedings, particularly in the treatment of ambulatory ulcer patients who fail to respond satisfactorily to the usual six-meal regimen.

None of the patients with ulcer had any subjective discomfort following the administration of milk, even when the nature of the ingested substances was not made known. The finding of milk in nearly all sixty-minute specimens indicated that milk is more effective than fruit juice in decreasing gastric motility.

Application to therapy

It would appear that frequent between-

11. Ehrmann, Rudolf: Therapeutic Aspects of Peptic Ulcer, Rev. Gastroenterol. 14:89-95 (Feb.) 1947.

meal feedings of carefully selected foods are important in combatting the ability of the stomach to produce highly acid secretions when peptic ulcer is present. The pH curves obtained after the milk feedings paralleled one another in all groups of patients and varied only in the intensity of the response. After the administration of orange juice, patients with ulcer showed a greater increase in acidity than did the other patients studied. Apparently the stimulating effect of the orange juice on the gastric secretions is intensified in patients with peptic ulcer. This response, as well as the indirect evidence of increased motility, may in part explain the subjective symptoms of many of these patients following the ingestion of fruit juices.

Conclusions

1. The buffering effect of orange and tomato juice on gastric acidity is brief and declines rapidly thirty minutes after ingestion. A stimulating effect was almost invariably noted in the next thirty-minute period.

2. One hour following the administration of orange juice, mean pH levels of the gastric contents were found to be below both fasting and after-breakfast values.

3. The buffering effect of milk on gastric acidity, although of longer duration than that of fruit juice, may have to be maintained by frequent feedings.

4. When orange juice or other fruit juices are added to the diet of patients with peptic ulcer, they should be given with regular meals or in combination with other foods.

Dangerous drugs.—It is unfortunate that some vendors of vitamin D have gone out of their way trying to convince physicians that the use of the drug in huge doses is perfectly safe. Certainly any physician who has ever seen a few cases of serious injury due to the use of vitamin D will not subscribe to that statement.

It is unfortunate, but throughout the long history of medicine, one finds that physicians have always had so much pressure put upon them to do something for the person who is desperate because of the persistence of some disabling disease that always they have used in large quantities drugs the usefulness of which has never been demonstrated. Today any physician past sixty years of age can remember the time when everyone with a cough or with tuberculosis had his or her digestion ruined with large doses of creosote which was supposed to kill the offending bacteria, but didn't.

Doubtless, physicians will always be high-pressured into giving drugs whose usefulness has never been demonstrated scientifically, but in that case the wise man who does not want to do harm will prescribe small doses.—Walter C. Alvarez: *The Danger of Giving Large Amounts of Vitamin D*, *Gastroenterology* 11:136 (July) 1948.

PRESENT TRENDS IN LABORATORY PROCEDURES

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STATE BOARD OF HEALTH

RALEIGH

Sometimes we can best tell where we are going by looking at the places where we have been. This is a hazardous habit if we are travelling at a high rate of speed; but if we stop for a moment, a look backward may reveal some landmarks which will help us to go forward with some assurance that we will make genuine progress. When we consider recent trends in laboratory procedure, we are almost compelled to stop and ponder on the procedures of the past; for many of our present-day activities and those of the predictable future are merely adaptations of old, tried and true methods or improvements of tests which have been tried and abandoned, only to be revived when a new antigen, medium, drug, chemical or instrument is added to our list of facilities.

Examination of Water

If we look backward, we find that the sanitary examination of water is a historical landmark for public health laboratories in North Carolina. The General Assembly in 1907 established the State Laboratory of Hygiene, made an appropriation of \$2,000, and supplemented this appropriation with a schedule of fees which the laboratory should charge for the examination of specimens from all concerns which sold water in the state. Thus was established an activity and the precedent that financially the State Laboratory of Hygiene must be partially self-supporting. Each year since then this laboratory has been expected to take in receipts equal to one third to one half of its total operating expenses.

The objective of our sanitary examination of water is essentially the same today as it was forty years ago. Today we have better equipment, better media, better methods, and higher standards. We are now making complete chemical analyses, primarily for the purpose of establishing more effective treatment plants or operating equipment more efficiently, but also to aid industry in choos-

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*Director, State Laboratory of Hygiene, Raleigh, North Carolina.

ing locations where suitable water is available. A new aspect of the water supply problem is looming large upon the horizon—the so-called trace elements. A few years ago we regarded the presence of fluorides as undesirable; today a certain concentration of fluorine is considered so advisable that some communities are adding fluorides to their drinking water in the expectation that those who drink it will have fewer decayed teeth. Perhaps sometime in the future traces of copper, boron, or some other element will be considered as an essential ingredient of drinking water.

Serologic Tests for Syphilis

From the standpoint of volume of work, serologic tests for syphilis are important. Probably more effort has been exerted to improve these procedures than for any other laboratory test. We have a multiplicity of tests, or rather techniques, bearing the name of the author serologist, each of whom claims that his procedure would find more syphilis and never be falsely positive. While much has been done to improve sensitivity, it is the lack of specificity which continues to worry laboratory directors. False positives frequently place the stigma of syphilis on people who do not have, and have not had, the disease. The most recent hope is the cardiolipin antigen. It is apparent, however, that the false positive test has still not been eliminated.

The quantitative serologic test for syphilis is one example of a procedure which has waxed and waned in favor. At the moment it is highly regarded by most syphilographers and is considered an indicator of the effectiveness of rapid-treatment methods. Its value for this purpose, as well as the value of rapid treatments themselves, can only be determined with the passing of the years. At the State Laboratory of Hygiene we are now making quantitative tests for physicians who are giving penicillin to their patients and for those who are trying to detect congenital syphilis in infants. Doctors who are responsible for patients who have been treated in either the Western or Eastern Medical Centers should continue to send specimens from these patients to the Centers, and not to the State Laboratory of Hygiene.

Complement Fixation Tests

When we became aware of the widespread distribution of virus infections, most of us

thought in terms of virus laboratories for the isolation and identification of the viruses themselves. The cost of setting up such laboratories and the scarcity of well trained virologists kept most of us from embarking on this venture. Now it seems that serologic studies, particularly the complement fixation test, will supply us with the essential information needed to give laboratory aid to the clinician or epidemiologist. Several years ago, you will recall, complement fixation was pretty well discredited as a laboratory test for diseases other than syphilis. Now we have antigens which will help identify specific virus infections. Progress in this field is so rapid that in a few months or years dependable antigens for a considerable number of viral as well as rickettsial infections will be commercially available. Even for such conditions as amebic dysentery and trichinosis complement fixation offers hope of giving cheap and dependable laboratory aids in diagnosis. In our own laboratory complement fixation tests for endemic typhus and Rocky Mountain spotted fever apparently become positive almost as rapidly as the Weil-Felix test and are type specific.

Microscopic Examinations

When we pause to consider those laboratory examinations which are made chiefly by the microscope, we think automatically of the old fashioned or conventional Board of Health Laboratory procedures such as examinations of the sputum for tuberculosis, of a throat culture for diphtheria, of blood films for malaria, of animal heads for rabies, of urethral smears for gonorrhea, of feces for intestinal parasites, of spinal fluid for meningitis, and of chancre serum for syphilis. Some of the methods in use years ago were so satisfactory that, although new methods have been brought forward and tried, the old ways held on against modern competition.

For tuberculosis we still depend to a large extent upon the microscopic examination for typical acid-fast organisms, and upon guinea pig inoculation. There is an increasing use of cultural methods to reveal tubercle bacilli in specimens which have so few organisms that careful search under the microscope fails to show them. Cultural methods will yield positive findings sooner than animal inoculation, and at a fraction of the cost. Up to the present time, however, there is no indication for abandoning either microscopic examination or animal inoculation, for each

method has its own field of usefulness.

Gonococcus culture has a definite field of usefulness, particularly for the diagnosis of chronic gonorrhea and for determining the effectiveness of treatment.

We consider that it is good policy to inoculate mice with brain substance when microscopic examination fails to reveal typical Negri bodies in the brain cells of animals suspected of having rabies.

A new microscopic procedure which has aroused much interest is the examination of vaginal and cervical smears as an aid in the early diagnosis of cancer of the uterus. The study which Dr. Kernodle and Dr. Cuyler have made at Duke Hospital⁽¹⁾ has proved so valuable that we expect to set up a Cytology Service at the State Laboratory of Hygiene and make this service available to the physicians of North Carolina. It is hoped that some adaptation of this method may be useful for cancer of the urinary tract, of the lungs, and perhaps of the gastrointestinal tract. Other tests for cancer which may be found useful in the public health laboratory are now being evaluated, but critical appraisal may show them to be useless.

Before leaving the subject of examinations that are principally microscopic in nature, we should emphasize the fact that the so-called tropical diseases are likely to become a serious threat to the health of our people. We must be alert to think of them and to look for them. North Carolina is fortunate in having in its medical and public health schools men who are experts in tropical medicine. Our laboratory service should benefit from their advice and counsel.

Bacterial Culture

Bacterial culture is an increasingly important laboratory aid to diagnosis. For those diseases which have organisms circulating in the blood stream, blood culture is most helpful. Better mailing containers will increase the usefulness of cultural methods for those specimens which can be sent through the mail. For cultures which are difficult to identify, such as types of *Salmonella*, there are available competent reference laboratories with which arrangements have been made for study and accurate typing.

Preparation of Biologic Products

The general trend in the preparation of biologic products is for more emphasis to be placed on potency and toxicity tests, while still holding to the usual sterility and safety tests. The desire to increase the concentration of the antigenic content of products used for immunization has followed the improvement in the purity of those used for the treatment of disease. For immunization there is an increasing demand for products containing more than one antigen. Pertussis vaccine has been combined with diphtheria toxoid, alum precipitated, and diphtheria and tetanus toxoids have been combined. There is ample evidence that effective immunity is produced by each antigen when multiple antigens are used. So far there has been little demand for any product containing more than two antigenic agents.

In the case of pertussis, deaths occur most frequently in infants under 4 months of age. If we are to give protection to those who need it most, pertussis vaccine should be given to infants during the first two or three months of life, a period when effective immunization against diphtheria is not produced. If very young infants are given pertussis vaccine, their immunity to whooping cough can be boosted by giving them pertussis vaccine combined with alum precipitated diphtheria toxoid at 6 to 9 months of age. For typhoid vaccine the recommendation holds that initial immunization should be obtained by three doses given subcutaneously. The Army now recommends that each of the three doses be $\frac{1}{2}$ cc. Booster doses each year thereafter should be given intracutaneously.

Much progress has been made in the study of plasma fractions, the most familiar one being immune globulin, which has changed the methods for the management of measles epidemics. Serum albumin is particularly helpful in shock, and more dependable blood typing can be obtained by plasma fractions. In fact, the blood bank program of the future will be quite different from that of the past.

The Laboratory of the Future

Now what about the laboratory of the future? In North Carolina we are pretty well committed to the development of local laboratories, rather than the establishment of branch state laboratories. There are, of course, certain advantages as well as certain

1. (a) Kernodle, J. R., Cuyler, W. K., and Thomas, W. L.: The Use of Vaginal Smears in the Diagnosis of Genital Cancer, *North Carolina M. J.* 9:11-17 (Jan.) 1948. (b) Kernodle, J. R., and Cuyler, W. K.: Report of a 14-Month Study on the Use of Vaginal and Cervical Smears in the Diagnosis of Malignancy, *Ibid* 9:325-341 (July) 1948.

objections to each type of program. Perhaps the fundamental decision should be based upon whether or not we believe in local self government or in a strong state or national plan of administration. Another important factor to be considered is that many laboratory examinations can best be made near the source of the specimen.

To my mind another important reason for having local laboratory service is that a system of local laboratories gives a broad base of financial support; thus the state as a whole is assured of a more consistent type of service than is possible when the whim of a single budget officer or appropriating body can cause the quality of service to decrease or increase over a wide area. It is true, of course, that any one local laboratory may be dependent upon the decision of a local budget officer or appropriating body, but the service in the state as a whole should be more stable with locally operated laboratories than with the state or national system.

Since the enactment of the state marriage law, we have developed a system of approved local laboratories for the making of serologic tests for syphilis. There are now more than 100 of these approved laboratories in the state.

Plans have been made for the establishment of regional milk laboratories. Just what the Milk Commission and the General Assembly will provide in the way of a milk program only time can tell. We have seen 5- to 10-cow dairies replacing the 50-cow dairy. The question arises: Can the Board of Health make ten times the number of dairy inspections, or must we depend more and more upon the laboratory to find out the kind of milk produced in North Carolina?

We would like to see a laboratory as a part of each local health department and are of the opinion that we should plan to bring that service about as rapidly as possible. The Medical Care Program will unquestionably accelerate the development of local laboratories. It is hoped that the public health program may be closely integrated with the Medical Care Program. In a great many localities one laboratory can provide service for both the Medical Care Program and the local health department.

If present trends are not deceiving, the future reveals a vastly increased laboratory service extending into every nook and corner of the state. It will profit us little to have

well planned quarters, well placed laboratory furniture, and excellent equipment if we do not have well trained laboratory workers. In the past a technician should be taught to follow specific directions; now we need workers who not only know "how" but "why." The future laboratory worker should have good academic training in fundamental sciences, particularly chemistry, physics, and bacteriology. The most logical sources for these well trained workers are the colleges of North Carolina. Our leaders should confer with educational authorities in an effort to see that adequate preliminary training is offered to our college students. It is also important that provision be made for college graduates to secure experience in well regulated laboratories. We feel confident that the laboratory will be increasingly helpful in the health program.

Discussion

Dr. W. P. Richardson (Raleigh): Dr. Hamilton has given us a most interesting discussion of the present status and future prospects of many public health laboratory procedures.

There are two aspects of adequate laboratory service: One is the responsibility of the laboratory workers who actually do the tests, and the other—and I think this is equally important—is the responsibility of those who take the specimens on which the tests are performed. The results of any laboratory tests are dependent upon the specimens on which they are performed.

I hear a great many complaints from laboratories about hemolyzed blood specimens that are sent in for serologic tests for syphilis. It is important that we take all the precautions with which most of us are familiar to see that these specimens are properly taken and refrigerated until they are mailed.

We also have a responsibility not to ask for tests which we know are worthless—for instance, the examination of vaginal or urethral smears for the diagnosis of gonorrhea in the female. Culture is the only accurate method of making a specific diagnosis in a female.

Dr. Hamilton referred to the desirability of cooperation between the public health agencies and medical care programs. An increasing number of local hospitals and medical centers are being planned over the state. Many of these are in communities where the health departments, probably for many years to come, will have neither the volume of work nor the financial support to justify a health department laboratory. I think it is important that cooperative relationships be established between these centers and local public health agencies, both in laboratory work and in other fields.

Dr. Hamilton also referred to the matter of better training for laboratory workers. In a hospital, the presumption is that laboratory workers are under the supervision of a competent clinical pathologist. Few of us in local health departments would feel competent to give that type of supervision to our laboratory workers, and we must have workers who have the training and ability to carry on and do an effective job with the very limited amount of supervision which can be provided from the central laboratory.

Dr. E. W. Furgurson (Plymouth): I want to ask Dr. Hamilton when we can anticipate a negative Wassermann or Kahn test in patients who have been treated at the rapid treatment centers.

I also want to ask him what type of laboratory and x-ray facilities might be needed in a hospital of 30 to 50 beds, such as the Medical Care Commission is advocating for smaller communities. This is an important question with us. We don't want to put a millstone around the necks of the people by asking them to support a hospital on too large a scale.

In my community, about 47 per cent of the population is colored, and that means that it is going to be a terrific burden for those people to support a county hospital even after they have paid the initial cost.

Dr. Hamilton: Dr. Wright can answer Dr. Furgurson's first question more satisfactorily than I can because I think it has been asked him more often. So far as Dr. Furgurson's second question is concerned, I want somebody to volunteer to answer that. I can only give advice about what *not* to do. Don't place a laboratory down in the basement or up in the attic and give it closet space. Make provision for two laboratory technicians to work without bumping into each other. The laboratory should be provided with a location that gives it a little dignity, and comfort and convenience certainly should receive primary consideration.

Dr. John L. Wright (Director, Field Epidemiology Study of Syphilis, Chapel Hill): Syphilis serology following intensive treatment parallels almost the course of serology following the old methods. If the blood test doesn't revert to negative within a year, treatment is usually considered a failure.

Dr. H. C. Lennon (Greensboro): Until recently, North Carolina has supported very few, if any, pathologists except those connected with the medical schools. Within the past few years, more private pathologists have come into the state, and we hope that we are contributing a little to the raising of medical standards in the state. After hearing all these elaborate plans for laboratory services to be distributed by the state, I wonder whether there will still be room for private pathologists or whether the state is planning to establish laboratories all over the state in competition with the private pathologists. We, as pathologists, would like to know whether laboratory medicine is going to be taken over as state medicine.

Dr. Hamilton: I can't make any prediction specifically about the future. Primarily, it is our purpose to encourage the development of local laboratories rather than to establish branch laboratories. The policy that we are following, to all intents and purposes, is the program of New York State. I don't think we are ever likely to have enough money available to the public health program for us to establish state laboratories in each county in the state. I, personally, have no desire to have state medicine or socialized medicine including laboratory procedures.

We must suspect malignancy or a premalignant character in all gastric ulcers first appearing after the age of 40; in all those in the prepyloric inch, and in other parts of the stomach that are not on or adjacent to the lesser curvature; in those exceeding an inch in diameter; in those that do not heal after a month's strict medical treatment in bed and in which occult blood is still found in the stools after such treatment. All these should be submitted to surgery without further delay.—Ogilvie, H.: *The Early Diagnosis of Cancer of the Oesophagus and Stomach*, British M. J. 2:407 (Sept. 13) 1947.

FIBROMYOMA OF THE CERVIX

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The subject of uterine tumors, particularly fibromyomas, has been dealt with quite adequately by most writers on gynecologic subjects, but fibromyomas of the cervix have received little attention in the American literature, although foreign authors have written about the condition frequently. Most textbooks consider the subject as a subdivision of uterine fibroids, although Beecham⁽¹⁾ admits that the picture presented is often that of a purely cervical tumor.

Case Reports

Case 1

A 20-year-old white woman was admitted to Flushing Hospital on January 29, 1948, with the complaint of vaginal hemorrhage. The bleeding had been spontaneous, and a diagnosis of inevitable abortion had been made by the family physician, who packed the vagina with gauze, and immediately sent the patient to the hospital.

Her past history was irrelevant. The menarche was at the age of 12, and her periods were regular, occurring every twenty-eight days and lasting four to five days. She had been married in 1944, at the age of 17. She became pregnant a short time later, and after an uneventful pregnancy was delivered of a living child on December 22, 1945. Since that time her menstrual periods had been normal; the last period began on January 10, 1948, and lasted five days.

Examination on admission revealed a well-developed, well-nourished young white woman in no apparent distress. General physical examination was essentially negative. The blood pressure was 120 systolic, 80 diastolic.

Blood examination showed 4,330,000 red blood cells, 86 per cent hemoglobin, and 17,800 white blood cells, with 91 per cent polymorphonuclears and 9 per cent lymphocytes. Her blood group was O, and she was Rh-positive. Urinalysis was negative, and the Aschheim-Zondek test for pregnancy was negative.

On pelvic examination, a mass about the size of a two to three months' pregnancy was felt in the upper part of the vagina. The cervix was greatly dilated and stretched thinly over the mass. The fundus could not be definitely outlined. Through the speculum the mass could be seen, partially protruding from the cervix; it was grayish white in color, with a vein coursing across the surface. A tentative diagnosis of uterine polyp, possibly with some invagination of the uterus, was made.

Since the patient was somewhat uncooperative, she was examined under anesthesia. Preparations were made to remove the mass by either the vaginal or the abdominal route, depending on its location and extent. The mass was found to be entirely in the cervix, lying in the anterior lip with the cervical canal appearing as a slit posterior to it. The fundus could be felt above the dilated cervix. Because all

Read before the North Carolina Obstetrical and Gynecological Society, Mid Pines, April 18, 1948.

1. Beecham, C. T.: *Nonmalignant Diseases of the Cervix*, S. Clin. North America 25:1299-1305 (Dec.) 1945.

of the tissue was distorted, an incision was made over the posterior aspect of the mass, and, with little difficulty and little bleeding, the entire mass was shelled out. The remaining anterior lip was very thin, with much redundant tissue. The anterior mucosa was incised and stripped back, and the excess cervical tissue removed. The cervix was repaired by several deep sutures, and the mucosa replaced with three Sturmdorf sutures.

The postoperative course was uneventful, and the patient left the hospital on the fifth postoperative day. The cervix healed satisfactorily, and now looks like a normal multiparous cervix with no atresia of the canal.

The pathologic report on the specimen removed was as follows:

Gross: The growth was a well encapsulated mass 90 by 65 by 60 mm. The surface was smooth and pale grayish-tan in color. On section it consisted of grayish-white tissue, arranged in whorls. One area had a focal hemorrhage measuring 1 mm. in diameter.

Microscopic: The mass consisted of fibrous tissue and smooth muscle bundles, having a characteristic interlaced appearance."

The pathologic diagnosis was "Fibromyoma."

Case 2

A white woman, aged 39, was admitted to Flushing Hospital on April 4, 1948, complaining of a mass protruding from the cervix. She thought that it was a recurrence of a cystocele which had been repaired previously.

She had been married eleven years, and prior to her marriage she had been in good health. The menarche was at the age of 14, and her periods occurred every twenty-eight days, lasting three to four days. She had dysmenorrhea on the first day only. Her first pregnancy in 1938 was uneventful, a full-term baby being delivered by forceps. She was left with a marked cystocele and rectocele, which was repaired in 1939. In 1944 an ectopic pregnancy was interrupted and the right tube and ovary were removed. In 1945 she had a full-term pregnancy which was terminated by cesarean section. During the last pregnancy she had noticed a slight protrusion from the vagina, but since it did not inconvenience her, she did not consult a physician. In the past year, however, it had been growing larger and appearing at the vaginal outlet as a small mass. She experienced no pressure symptoms.

Examination revealed a well developed, well nourished white female, in no apparent distress. Her general physical condition was good. The blood pressure was 128 systolic, 82 diastolic. Blood count and urinalysis were normal. Pelvic examination revealed a normal sized uterus, in good position. The adnexa were normal. The cervix was normal in size, and the mucosa showed the scar of the colporrhaphy which had been done nine years previously. From the anterior lip of the cervix, there was an elongated mass, attached by a pedicle.

At operation, the mucosa was incised and stripped back for a short distance. A clamp was placed on the pedicle and the tumor removed. Bleeding was controlled with a transfixion suture, and the mucosa closed with interrupted sutures. The postoperative course was uneventful.

The pathologist's report was as follows:

Gross: Mass 40 mm. in length and 30 mm. in diameter, completely covered by epithelium. On section it was pinkish white with tissue arranged in whorls.

Microscopic: Fibrous tissue and muscle tissue interlaced.

Diagnosis: Fibromyoma."

Incidence

At the present time, it is estimated that cervical fibromyomas occur in about 5 per cent of all cases of uterine fibromyomas. Since the incidence of uterine tumors which cause symptoms has been estimated by Lynch to be less than 8 per cent of gynecologic admissions to hospitals, the incidence of cervical fibromyomas on gynecologic services is about one fourth of 1 per cent. In 1930 Turenin⁽²⁾ reviewed the literature, and found 112 cases. Douay⁽³⁾, in 1939, found 120 cases. Since that time, cases have reported from Argentina⁽⁴⁾, Brazil⁽⁵⁾, Austria⁽⁶⁾, Italy⁽⁷⁾, Belgium⁽⁸⁾, and from this country. Greenhill⁽⁹⁾ presented 3 cases in 1936, and in 1940 Dockerty and Masson of the Mayo Clinic reported a case which also showed squamous-celled carcinoma⁽¹⁰⁾. Torpin and Beard⁽¹¹⁾ presented a case in 1940, and in this article classified these tumors according to the location on the cervix from which they arose. In 1943 Torpin⁽¹²⁾ reported another case, in which the tumor had obstructed labor.

Classification

Torpin's classification is as follows:

A. Tumors arising from the upper part of the cervix and growing upward to the abdominal cavity, elevating the fundus.

B. Tumors arising from the middle portion of the cervix and extending laterally into the intraligamentous area, anteriorly under the bladder, or posteriorly into the tissues between the vagina and peritoneum.

C. Tumors which arise from the portio vaginalis and remain in the vaginal canal or protrude from it.

D. Tumors which arise from the stump after supracervical hysterectomy.

2. Turenin, quoted by Counsellor and Collins: Fibromyoma of the Cervix Uteri; Report of a Case, *Am. J. Obst. & Gynec.* 30:108-112 (July) 1935.
3. Douay, quoted by Bourg and Hannes(8).
1. (a) Boveri, J. L. and Belizan, L. A.: Fibromal de cuello uterino, *Rev. Assoc. med. argent.* 60:297-299 (May 15) 1946. (b) Mainetti, J. M. and Triaca, J. A.: Fibromioma de la porcion intravaginal del cuello uterino, *Rev. med. d' Hosp. ital. de La Plata* 2:39-51 (July-Dec.) 1945.
5. (a) Silva, Castro in *Rev. de gynec. e. d'obst.* 1:343, 1938. (b) Cavalcanti, R.: Cervical Myoma with Report of a Case, *Rev. med. de Pernambuco* 13:158, 1943.
6. Matolsky, K.: Vaginale Eneukleation eines cervicalen Myomherdes unter der Geburt, *Zentralbl. f. Gynäk.* 66: 2006-2008 (Dec. 12) 1942.
7. Micca, A. B. in *La Ginecologia* 16:873, 1937.
8. Bourg and Hannes: Contribution a l'etude du fibromyome du col uterin, *Bruxelles-med.* 27:577-583 (March 16) 1947.
9. Greenhill, J. P.: Fibromyoma of Cervix Uteri; Three Cases, One Developing in Stump after Hysterectomy, *Am. J. Obst. & Gynec.* 31:678-680 (April) 1936.
10. Dockerty, M. B. and Masson, J. C.: Unusual Coexistence of Squamous Cell Carcinoma and Cervical Fibromyoma, *Am. J. Obst. & Gynec.* 40:477-481 (Sept.) 1940.
11. Torpin, R. and Beard, B. C.: Fibromyoma of the Uterine Cervix. Pedunculated and Expelled from the Vagina, *Am. J. Obst. & Gynec.* 40:490-492 (Sept.) 1940.
12. Torpin, R.: Fibromyoma of the Cervix Uteri Obstructing Labor, *West. J. Surg.* 51:196-198 (May) 1943.

Complications

The importance of these tumors lies in their proximity to important pelvic structures such as the bladder, urethra, ureters, and rectum. The tumor can also complicate labor if it occurs in the lower part of the cervix, although Beck⁽¹³⁾ feels that in most cases the tumor moves upward as the cervix dilates and does not cause dystocia. The most important symptom reported is that of sudden, painless, and often uncontrollable vaginal hemorrhage, due to necrosis and erosion of the blood vessels.

These tumors are usually fast growing, probably because of their abundant blood supply. The commonest location⁽¹⁴⁾ is on the posterior lip of the cervix, and if a large tumor is so located⁽¹⁵⁾, it may compress the rectum or give a feeling of weight in the pelvis. Probably many of these tumors are removed in cases of multiple fibromyomas of the uterus, with no notice being taken of the fact that the tumor mass which fills the cul-de-sac had its origin in the cervix.

These tumors may also arise from the anterior lip and give urinary symptoms by compressing the bladder or urethra or both. If the tumor arises from the lateral aspect of the cervix, it will extend between the leaves of the broad ligament and compress the ureter, or become so involved with the ureter that it is difficult to separate it at operation.

Thus it can be seen that this tumor, which is in itself benign, can be an extremely dangerous one, and that it should be removed as soon as discovered.

Methods of Removal

The method of removal depends on the location of the tumor, as well as on the age of the patient⁽¹⁴⁾. In patients of the child-bearing age, myomectomy is the method of choice, but in older patients, particularly those past the menopause, total hysterectomy should be performed⁽¹⁶⁾. Pedunculated

growths can be removed by clamping the pedicle. Interstitial tumors which are entirely vaginal in extent may be removed by vaginal myomectomy; one should first be sure, however, that the entire mass can be reached from the vagina, so that the bleeding can be controlled from below. One must also define the bladder, for the mass often distorts the tissues to such an extent that normal vaginal landmarks are not located. Any tumor growing from the upper part of the cervix requires an abdominal operation. Victor Bonney⁽¹⁷⁾ favors this approach in all fibromyomas of the cervix. He feels that myomectomy, if it is necessary to preserve the uterus, can be more safely performed when one has the major blood vessels in an easily accessible position.

Conclusion

I have presented 2 cases of fibromyoma of the cervix, a comparatively rare tumor which can give rise to very serious complications. The patient (aged 20) in the first case presented is believed to be the youngest in which this tumor has been found. Most cervical fibromyomas have been found after or near the menopause, and very few cases have been reported in patients under the age of 35.

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Definition of a psychoneurosis.—A psychoneurosis is a group of symptoms which may be physical, mental, or both, which develop in an individual when he is incapable of dealing successfully with the circumstances in his life at a given time. His powers of adaptability are inadequate in the face of the complexities of the present situation. There are two implications in this definition of which I hope you will make note: first, that neuroses occur in response to demands made upon the individual. These demands may come from without or from within the person. Secondly, observe that this definition implies that recovery from a neurosis is possible. Improvement may be brought about either by reduction of the demands upon the individual or by the acquisition of additional knowledge and understanding, by which his ability to adjust or cope with the situation is improved. The former method is exemplified by the regimen which requires a long rest "getting away from it all," or some other procedure which masks the situation or otherwise diminishes the pressure. The latter method is best illustrated by a program of psychotherapy which increases the person's adaptive powers.—Samuel B. Hadden: *The Genesis of the Neuroses*, *Ann. Int. Med.* 27:282 (Aug.) 1947.

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IN VITRO OBSERVATIONS ON THE ANTIBACTERIAL ACTIVITY OF AUREOMYCIN

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Preliminary clinical and laboratory investigations of a new antibiotic, aureomycin, indicate that this agent has a high degree of chemotherapeutic activity against rickettsias and the larger viruses (the lymphogranuloma venereum and psittacosis group) in addition to many of the common gram-negative and gram-positive bacteria. Aureomycin is a drug of low toxicity and may be administered by either the oral or the intramuscular route⁽¹⁾. Before this antibiotic can be employed most effectively, practical laboratory methods for its assay must be developed, its pharmacologic properties must be defined, and its activity must be compared with that of the antibacterial agents now in clinical use.

The following *in vitro* study on aureomycin was undertaken in connection with a clinical trial of this antibiotic in the treatment of Rocky Mountain spotted fever⁽²⁾. A practical laboratory procedure was developed for assaying aureomycin in serum and for studying several of the pharmacologic properties of this drug that are important in its clinical usage. The susceptibility of some of the common bacterial pathogens to aureomycin was investigated and was compared with their susceptibility to streptomycin and penicillin. As secondary bacterial complications frequently occur during the course of viral or rickettsial infections, a knowledge of the spectrum of antibacterial action exhibited by aureomycin is essential to its proper use in these diseases. This information will aid in deciding whether another chemotherapeutic agent should be given to prevent superimposed bacterial infections, or

whether adequate prophylaxis may be expected from aureomycin alone.

Methods

Method for testing the sensitivity of bacteria to aureomycin

The aureomycin used in this study was the crystalline hydrochloride salt, a purified product of *Streptomyces aureofaciens*⁽³⁾. The antibiotic was stored at room temperature in the desiccated or lyophilized form. The latter was soluble, in concentrations of 10 mg. per cubic centimeter, in twentieth molar phosphate buffer, physiologic saline, or distilled water; the desiccated powder was soluble in these diluents in concentrations through 0.1 mg. per cubic centimeter. Solutions of this antibiotic were made just prior to a test and, when necessary, were sterilized by Seitz filtration.

In vitro measurements of the sensitivity of various bacteria to aureomycin were obtained by a serial dilution method. Five tenths cubic centimeter of a diluted six-hour culture of the organism in tryptose phosphate broth (Difco) was added to each of several 0.5 cc. samples of serial dilutions of the antibiotic, previously made in master tubes of the nutrient broth. If too large a bacterial inoculum was employed, the results of the test were of little practical value. A ten thousand fold culture dilution (10^{-4}) was used for the gram-negative bacilli tested, and a thousandfold dilution (10^{-3}) for the gram-positive cocci. The size of an individual inoculum was determined by viable pour plate counts in solid media. Observations were made after 18 hours of incubation at 37 C., and the end point was taken as the first tube in a series of drug dilutions that showed no growth as measured by turbidity; the drug concentration per cubic centimeter in this tube was recorded as the sensitivity of the test inoculum used.

It should be emphasized that all of the tests used to measure the sensitivity of bacteria to chemotherapeutic agents, including the method used in this study, require a long period of incubation before end points are recorded. The aureomycin sensitivities obtained by these methods could be subject to error because of drug inactivation. In view of this possibility, attempts were made to develop a sensitivity test based on the principles of the rapid turbidimetric method used to measure aureomycin levels. Failure to develop a simple procedure and difficulty in the interpretation of results have so far made such a test impractical.

Methods for measuring aureomycin levels

The activity of aureomycin in solution was measured against a reference strain of *Staphylococcus aureus*⁽⁴⁾ by the twofold serial dilution technique and by a modification of the three-hour turbidimetric method of Osgood and his associates⁽⁵⁾. Because of the rapid loss of potency exhibited by solutions of aureomycin at physiologic ranges of temperature and pH, this latter procedure proved to

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1. Conference on Aureomycin, New York Academy of Sciences, July 21, 1948.
2. Harrell, G. T., Meads, M., and Stevens, K. M.: Aureomycin: A New Antibiotic Effective Orally, South. M. J., in press.

3. Supplied by Dr. Herald R. Cox, Lederle Laboratories Division, American Cyanamid Company, Pearl River, New York.

4. Though several strains of hemolytic *Staph. aureus* were found satisfactory for reference, the Oregon J. strain (American Type Culture Collection No. 9801) used by Dr. Edwin E. Osgood was adopted for the purpose of standardization.

5. (a) Osgood, E. E. and Graham, S. M.: A Simple Rapid Method for Assay of Bactericidal and Bacteriostatic Agents, Am. J. Clin. Path. 17:93-107 (Feb.) 1947.
(b) Osgood, E. E.: Assay of Penicillin, Streptomycin, Trivalent Organic Arsenicals, and Other Bactericidal and Bacteriostatic Agents, J. Lab. & Clin. Med. 32:444-460 (Apr.) 1947.

have a distinct advantage over tests requiring longer periods of incubation.

The principles, calculations, and technique involved in the turbidimetric method used in this study are similar to those that have been described in detail by the above mentioned investigators, but its adaptation to the assay of aureomycin and for measurement in a Coleman junior spectrophotometer required the following changes:

1. The use of 19-by-150 mm. test tubes required a final volume in each tube of 6 cc. (a 0.5 cc. aliquot of the test sample, 0.5 cc. of distilled water in which the aureomycin standard or other agents were added, and 5 cc. of the test culture).

2. The most suitable aureomycin standard was found to be one that gave a final concentration of 0.1 microgram per cubic centimeter in the test. This concentration was obtained by adding 0.5 cc. of distilled water containing 1.2 micrograms of aureomycin per cubic centimeter.

3. A culture of the reference strain in its early logarithmic phase of growth was used when it had reached an optical density reading of 0.04 to 0.05 Coleman units, preferably 0.045 units.

4. Readings of optical density were most reliable when made 1½ and 2½ hours after the onset of the test. At later periods measurements were often affected by deviations in the straight-line phase of growth of the reference organisms. This was particularly true when serum was included in a test. If a pure culture of the reference strain is used and if the other constituents in the test are not grossly contaminated, the assay may be performed without the use of sterile technique.

An analysis of consecutive assays of samples of known aureomycin potency, made during the period that this turbidimetric method was under investigation, demonstrated an accuracy of ± 27 per cent in drug concentrations ranging from 0.24 to 2.4 micrograms per cubic centimeter (final concentrations in the test 0.02 to 0.2 microgram per cubic centimeter). When familiarity with the technique had been acquired and when the controls, standard, and "unknowns" were each tested in duplicate, this error was reduced to ± 12 per cent. By increasing the initial optical density of the reference culture, higher antibiotic levels could be measured, and when the culture density was decreased the reverse was found to be true. On the other hand, it was noted that, for test samples that fell above or below the range of 0.24 to 2.4 micrograms per cubic centimeter, the accuracy of measurement was greater if they were diluted or added in larger volumes to a test and the inoculum size of the staphylococcus kept constant.

Some Physical Properties of Aureomycin Stability

The results of a study on the stability of aureomycin in several common diluents at 37 C., 4 C., and -20 C. is shown in table 1. The pH that resulted from the addition of powdered drug to each solution was not adjusted. Aureomycin demonstrated a rapid loss in potency at 37 C. in all of the diluents that were studied; this loss was particularly evident in solutions that were neutral or slightly alkaline. The drug was inactivated more slowly at average ice box temperature (4 C.); the increase in stability at this temperature was significant in 24 hours for all solu-

Table 1
The Effect of Time, Temperature, and Hydrogen Ion Concentration on the Stability of Aureomycin in Several Common Diluents

	SERIAL DILUTION ASSAY				TURBIDIMETRIC ASSAY			
	Nutrient Broth	M/20 Pot Buffer	Physiologic Saline	Distilled Water	Serum (90%)	Distilled Water		
Drug concentration	500 mcg./cc.	500 mcg./cc.	500 mcg./cc.	500 mcg./cc.	1.9 mcg./cc.	1.2 mcg./cc.		
pH of mixture	7	7.3	5.5	5.4	7.4	5.5		
Storage temperature (C.)	37 4 -20	37 4 -20	37 4 -20	37 4 -20	37 4 -20	4 -20		
Storage for 24 hours	-16 -2 0	-32 -2 0	-2 0 0	-2 0 0	0	-21% -13%	+1%	
Storage for 48 hours	-32 0 0	-64 -2 0	-2 0 0	-2 -2 0	-42% -13%	-17%	-10%	
Storage for 72 hours	-32 -4 -2	-128 -4 -2	-2 -2 -2		-32%	-1%	-67%	-75%

* Aureomycin activity is expressed as the potency of an aliquot of the test solution in terms of its fold decrease after the start of the experiment when measured by the serial dilution assay method (± 50 -100% error), and in terms of percentage of zero hour activity when measured by the turbidimetric assay procedure (± 12 per cent error).

tions that were not at an acid pH. Aureomycin in distilled water appeared to be the most stable of the solutions at 4 C., but during the third 24-hour period of storage a 65 per cent loss of potency occurred. Within experimental error, the antibiotic was stable in all diluents and at all pH ranges if it was stored in the frozen state (-20 C.) for not longer than 48 hours. It therefore appears that the stability of aureomycin in solution is inversely related to time and temperature, and is proportional to the final hydrogen ion concentration in the solution.

Aureomycin was very rapidly inactivated in fresh human serum during incubation at 37 C. Turbidimetric assays performed in quadruplicate on such mixtures showed a 29, 35, and 57 per cent fall in the titer of the antibiotic after one, two, and three hours respectively. To determine whether this loss of activity was due to the formation of an inactive combination of aureomycin with albumin—similar to the penicillin-albumin complex—the activity of 0.1 microgram of aureomycin in nutrient broth was compared with that of the same amount of drug in broth containing human serum or albumin; the final concentrations of albumin in these last two mixtures were equal. The results, including the relative growth rates of the reference strain of *Staph. aureus* in the various mixtures without added aureomycin, are shown in table 2.

The marked loss of the drug's antibacterial activity in the presence of human serum could not be explained on the basis of an interaction of aureomycin with albumin. The actual increase in the drug's potency that was apparent in solutions containing 1 per cent albumin may be due to the stimulating effect of albumin on the growth of

the reference organism when other constituents of human serum are absent. The effectiveness of other antibiotic agents is known to be greater when the multiplication rate of a micro-organism is increased. The relationship between the antibacterial potency of aureomycin and the rate of bacterial growth appears to be of a similar nature.

Effect of procaine on potency of aureomycin

The intramuscular injection of aureomycin in distilled water gives rise to a considerable degree of local discomfort that can be somewhat reduced if a neutral buffer is used as the vehicle for the drug. By mixing 0.5 cc. of 1 per cent procaine with a dose of aureomycin, injections may be made more tolerable. It was demonstrated that this latter procedure had no effect on the potency of the drug. *In vitro* tests showed that the highest concentrations of procaine hydrochloride used—100 mg. per 100 cc.—failed to inhibit or stimulate the action of this antibiotic.

Failure to penetrate the membrane of human red blood cells

As compared with penicillin and streptomycin, aureomycin is unique in its ability to exert a detrimental effect on certain intracellular pathogens—an observation which suggests that it may pass through cell membranes. The following experiment was designed to test such a hypothesis in regard to the membrane of human red blood cells. Aureomycin was added to heparinized whole blood and to serum in equal final concentrations; the solutions were mixed thoroughly, and placed at 4 C. for 30 minutes. This temperature was chosen to minimize drug in-

Table 2

The Antibacterial Activity of Aureomycin in Nutrient Broth Compared with That of the Antibiotic in Broth Containing Human Serum or Human Albumin.

Media	Final Concentration of Aureomycin Added	Measurable Antibacterial Activity	Percent of Activity in Broth Alone	Relative Growth Rates of <i>STAPH. AUREUS</i> in Each Medium†
Broth	0.1 mcg./cc.	0.100 mcg./cc.*	100%*	1.000
Broth + 10% serum	0.1 mcg./cc.	0.058 mcg./cc.	-42%	1.075
Broth + 25% serum	0.1 mcg./cc.	0.056 mcg./cc.	44%	1.120
Broth + 0.4% albumin	0.1 mcg./cc.	0.095 mcg./cc.	-5%	1.525
Broth + 1% albumin	0.1 mcg./cc.	0.125 mcg./cc.	+25%	1.990

* Reference point for 100 per cent activity on which the comparisons were based.

† Ratio of Control Growth Rates = $\frac{\text{Tangent of the angle made by the straight-line portion of the growth curve in each type of medium without antibiotic}}{\text{Tangent of the angle made by the straight-line portion of the growth curve in nutrient broth without antibiotic}}$

Values greater than 1.000 indicate a rate of growth of the reference strain that is greater than its growth in tryptose phosphate broth without serum or albumin.

activation, and would have little effect on the rate of diffusion of a substance. Turbidimetric assays were then done in duplicate on the supernate of the centrifuged whole blood and on the serum. In the former, which had a hematocrit of 44 per cent, the drug exhibited twice as much activity as in the serum. Within the ± 12 per cent error of the assay procedure, aureomycin failed to penetrate the red cell membrane in measurable amounts.

Serum Levels of Aureomycin Following a Single Intramuscular Injection in Human Beings

A single dose of 40 mg. of aureomycin was given to 8 convalescent patients by the intramuscular route. Each dose was administered immediately after it had been dissolved in 4 cc. of sterile twentieth molar phosphate buffer plus 0.5 cc. of 1 per cent procaine hydrochloride. The ages of the subjects ranged from 25 to 59 years. No evidence of cardiac, hepatic, or renal damage was demonstrated in these patients, and all were able to concentrate urine to a specific gravity of greater than 1.020. Blood was drawn for assay purposes before the drug was administered and at various time intervals thereafter, as indicated in table 3. The results of these tests in the first two subjects indicated that aureomycin was slowly absorbed from the site of injection; therefore, in the remaining 6 individuals, samples were taken at longer intervals.

In order that maximum activity could be measured, the blood samples were centrifuged after being placed in an ice box for one hour, and the serum was frozen rapidly in an alcohol bath at -20°C . Serum levels of aureomycin were determined by the rapid turbidimetric method within 24 hours after a specimen had been received. The observations are shown in table 3, and though they

are few in number they attest the value of the three-hour method of assay. These low levels of activity could not be measured by procedures that required a long incubation period. In 6 subjects maximum serum concentrations first appeared in specimens that were obtained three or six hours after a dose, and antibacterial activity was detectable at nine hours in 5 of the 6 specimens tested.

Comparison with Other Antibiotics in Vitro
Mechanism of action

The mechanisms of antibacterial action of aureomycin and penicillin were compared by a study of the growth of *Staph. aureus* in liquid media containing these agents. Tubes of nutrient broth containing respectively 1 and 0.1 microgram of aureomycin per cubic centimeter, 0.1 and 0.01 unit of penicillin per cubic centimeter, and no antibiotic were each inoculated with approximately 560,000 organisms from an eighteen-hour culture of the reference strain, and incubated in a water bath at 37°C . Counts of the viable organisms in each tube were made five times during a 24-hour period by pouring appropriate dilutions of a culture aliquot and agar media at 45°C . After these pour plates had been incubated for 24 hours at 37°C ., the visible colonies that appeared were counted. The number of colonies was taken as the count of viable bacteria per cubic centimeter when corrections had been made for the dilution represented by each aliquot. The combined results are shown in figure 1, in which the logarithm of the number of surviving organisms per cubic centimeter for each tube is plotted against the hours of incubation of each test.

The actions of aureomycin and penicillin against *Staph. aureus* are similar. In low concentrations both drugs cause an inhibition of growth. Between the sixth and twelfth hours, the complete bacteriostasis due to 0.1

Table 3

Serum Concentrations of Aureomycin in Eight Human Beings Following a Single Intramuscular Dose of Forty Milligrams

Hours after Dose	SERUM CONCENTRATIONS OF AUREOMYCIN (Micrograms per Cubic Centimeter)							
	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8
$\frac{1}{2}$	0.08	0.14						
1	0.20	0.12						
2	0.16	0.06						
3								
4	0.12	0.08	0.31		0.17	0.43	0.68	0.73
6			0.10	0.81	0.00	0.45	0.34	0.73
9			0.16	0.48	0.18	0.45	0.00	0.43
12			0.00				0.00	0.00

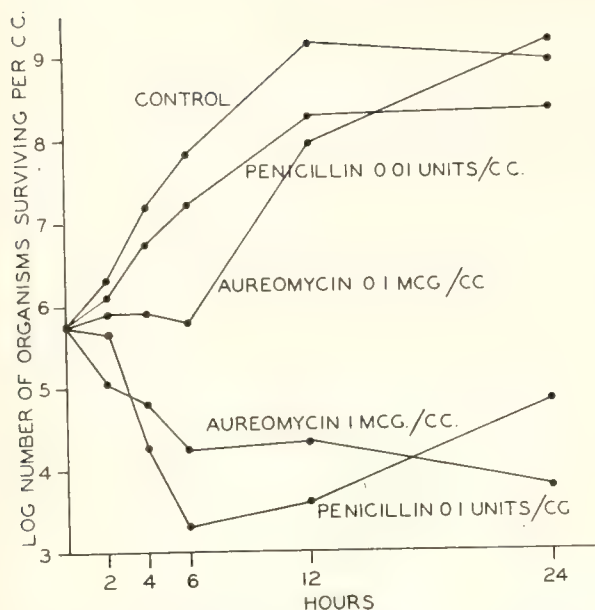


Fig. 1. The effect of aureomycin and penicillin on the growth of *Staphylococcus aureus* in vitro.

microgram of aureomycin per cubic centimeter was overcome and followed by the unrestricted growth of the culture. A tenfold increase in the concentration of aureomycin and penicillin resulted in the rapid killing of the majority of the organisms in the inoculum. The bactericidal effect of drugs in these concentrations was noted for six hours, and was followed in both instances by bacteriostasis that persisted for the remainder of the 24-hour observation period.

Antibacterial properties

The activities of aureomycin, penicillin and streptomycin against 32 strains of pathogenic bacteria were compared *in vitro*; the majority of the organisms had been recently isolated from human beings. Because of the relative ineffectiveness of penicillin against most of the gram-negative bacilli, tests of their sensitivity to this agent were omitted. The observations recorded are summarized in table 4.

Like penicillin, aureomycin was much more effective against the gram-positive cocci than against the gram-negative organisms that were tested. It is not surprising, in view of the rapid inactivation of aureomycin in alkaline solution, that the two species of bacteria which produce large amounts of alkali during their growth (*Proteus vulgaris* and *Alcaligenes fecalis*) exhibited a high degree of resistance to the action of this anti-

biotic. The susceptibility of individual bacterial strains to the three antibiotics varied independently and in a random fashion. Bacterial variants isolated from streptomycin-sensitive strains and showing an increased resistance to this antibiotic failed to demonstrate a concomitant increase in their resistance to aureomycin. In a patient with subacute bacterial endocarditis who was being treated with penicillin and streptomycin, a strain of *Streptococcus viridans* (no. 16) had developed a high degree of fastness to these drugs; this strain was relatively sensitive to aureomycin *in vitro*.

Comment

Range of effectiveness

Unpublished reports from several clinics indicate that aureomycin has been effective in the treatment of Rocky Mountain spotted fever, endemic typhus, Q fever, and lymphogranuloma venereum in human beings, and that this new antibiotic deserves an extensive clinical trial in these infections and in those due to related micro-organisms⁽¹⁾. Experiments described in this paper have demonstrated that aureomycin also has a potent antibacterial action *in vitro*. The activity of very low concentrations of this drug against strains of *Staph. aureus*, *Strep. viridans*, *Streptococcus pyogenes*, and *Streptococcus fecalis* warrants an investigation of the clinical value of aureomycin in diseases due to these organisms. Unlike the gram-positive species that were treated, the gram-negative bacilli were relatively resistant to this antibiotic; as a whole, this latter group of organisms showed a greater susceptibility to streptomycin.

The development of fastness to streptomycin *in vitro* did not affect the sensitivity of bacteria to aureomycin. A strain of *Strep. viridans* that had become resistant to penicillin and streptomycin *in vivo* was found to be sensitive to very low concentrations of aureomycin *in vitro*. Drug fastness is a property of bacterial strains that varies in an independent manner for each chemotherapeutic agent. Aureomycin may prove of great value, therefore, in certain instances where treatment with penicillin or streptomycin has failed because the infecting organism is naturally resistant or develops resistance to these drugs.

Table 4

The Comparative Sensitivity of Common Pathogenic Bacteria to Aureomycin, Streptomycin, and Penicillin

Organism	Strain Number Tested	Inoculum Size (Organisms per Cubic Centimeter)	Antibiotic Sensitivity (Micrograms per Cubic Centimeter)		
			Aureomycin	Streptomycin	Penicillin
Staphylococcus aureus	1	17,000	0.3	3.1	0.02
	2	18,000	0.3	3.1	0.15
	3	26,000	0.3	3.1	0.02
	4	2,000	0.3	0.8	0.02
	(Var.) 4	5,000	0.1	> 50	0.01
	5	7,000	0.7	3.1	0.15
	6	80,000	0.3	12.5	0.02
	7	2,000	< 0.1	0.3	0.01
	8	3,000	0.1	1.5	0.01
	9	1,000	< 0.1	0.1	< 0.005
	10	20,000	< 0.1	1.5	0.04
	11	13,000	0.3	6.3	0.02
	12	21,700	0.3	6.3	0.30
Streptococcus pyogenes viridans	13	6,000	1.5	12.5	0.005
	14	2,000	0.1	12.5	—
	15	1,000	0.1	0.1	—
fecalis	16	71,000	1.5	> 50	1.5
	17	100,000	1.5	> 50	0.3
	18	5,000	0.7	> 50	1.5
nonhemolyticus	19	36,000	0.1	12.5	0.01
	20	120,000	3.1	3.1	—
Aerobacter aerogenes	21	84,000	6.2	> 50	—
	22	60,000	50	—	—
Escherichia coli	23	70,000	25	—	—
	24	71,000	6.2	6.2	—
	25	94,000	3.1	6.2	—
	26	26,000	> 50	3.1	—
Alcaligenes fecalis	27	78,000	25	25	—
Salmonella suispestifer	28	230,000	> 50	12.5	—
Proteus vulgaris	29	100,000	> 50	—	—
Klebsiella pneumoniae	30	89,000	50	1.5	—
	31	77,000	25	0.8	—
	(Var.) 31	32,000	25	1.5	—
	(Var.) 31	42,000	25	6.0	—
	(Var.) 31	44,000	25	> 50	—
Pseudomonas aeruginosa	32	65,000	12.5	3.1	—
	33	300,000	> 50	> 50	—

(Var.) = Variant strains isolated from their streptomycin-sensitive parent and demonstrating different degrees of fastness to this antibiotic.

> = Greater than

< = Less than

* One Oxford unit is equal to 0.6 microgram.

Instability

A rapid loss of potency was exhibited by crystalline aureomycin hydrochloride in human serum, nutrient broth, and several of the common diluents. As the inactivation of the drug was particularly evident at 37 C. and in neutral or slightly alkaline solutions, a pharmacologic evaluation of aureomycin *in vivo* will be significantly concerned with this property. Microbiologic methods of assay that require more than six hours of incubation are of little value in measuring serum levels of aureomycin in human beings; a three-hour turbidimetric method proved to be practical and dependable. Furthermore, the unstable nature of this drug at a neutral

pH requires the frequent preparation of fresh solutions if parenteral therapy must be used.

These handicaps may be overcome to a large degree, if the chemical structure of this drug can be modified in such a way as to make it more stable without affecting its chemotherapeutic activity. In addition, a more stable compound should increase materially the duration of the effective action of this drug *in vivo*.

Summary

Aureomycin, an effective antibiotic in the treatment of infections caused by rickettsias and certain viruses, was shown to have an

antibacterial action against some of the common pathogens *in vitro*. The high degree of activity demonstrated by this drug against *Staph. aureus* and the different species of streptococcus warrants an investigation of the therapeutic effectiveness of aureomycin in diseases due to these organisms. These findings further indicate that the use of aureomycin alone in diseases due to intracellular micro-organisms should also provide protection against the occurrence of secondary bacterial complications in these diseases.

Aureomycin is rapidly inactivated in human serum and other vehicles at physiologic ranges of temperature and pH. This property made the usual procedures for assaying the activity of chemotherapeutic agents of little clinical value. A rapid three-hour assay method was shown to be reliable and practical for measuring serum levels of aureomycin in human beings and for studying some of the properties of this drug.

Aureomycin exhibits both a bactericidal and a bacteriostatic action against *Staph. aureus*, the same mechanisms of action shown by penicillin against this organism.

Though aureomycin is effective against intracellular micro-organisms, its diffusion into human red blood cells could not be demonstrated.

THE PATHOGENESIS, DIAGNOSIS, AND TREATMENT OF VARICOSE VEINS AND VARICOSE ULCERS

Analysis of Two Hundred Cases Treated by Upper Saphenous Ligation

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CHARLOTTE

Varicose veins of the lower extremities and the complications which arise from them are seen by all physicians, regardless of their specialty. Larson⁽¹⁾ estimates that they occur in 10 to 17 per cent of the population. They are encountered more frequently in women than in men. In a series of 285 cases studied by Ochsner and Mahorner⁽²⁾, 247 patients

were females and 38 were males. The authors stated, however, that the high proportion of females in their series was due to the fact that 62.6 per cent of the women examined came to the clinic because of pregnancy and not primarily because of the varicosities. In our series of 200 cases seen in private practice, 117 patients (58.5 per cent) were women and 83 (41.5 per cent) were men.

Of the cases studied by Stuebner⁽³⁾, both extremities were affected in 52 per cent, and only one extremity in 48 per cent. In our series these figures were reversed, both lower extremities being involved in 48 per cent and only one leg in 52 per cent. In our cases the duration of the disease ranged from six months to thirty years, the average being seven and a half years. The youngest patient was 17 years of age and the oldest 65. The greatest number of patients were in the age group between 30 and 35.

Pathogenesis

Homans⁽⁴⁾ has defined varicose veins as "nothing more than a superficial vein, almost necessarily a great saphenous, which having lost its valves is unable to transmit blood against gravity." Therefore, the symptoms produced by varicosities of the lower extremities are the result of progressive venous insufficiency.

Among the factors which contribute to the development of varicose veins and varicose ulcers are heredity, phlebitis, upright posture of man, congenital anomalies of valves, increased intra-abdominal pressure, and hypercoagulability of blood within damaged veins. We are convinced that the most important of these are heredity and thrombophlebitis. In our series, 49 per cent of 162 patients questioned gave a history of varicose veins in their families, and thrombophlebitis was found to have been present in 22 per cent of 185 cases. Larson and Smith⁽¹⁾ found a family history of varicosities in 43 per cent of their cases and a past history of thrombophlebitis in 11 per cent.

De Takats⁽⁵⁾ believed that man's erect posture has put an unusual strain upon the saphenous network. When the valves have become incompetent, the long column of

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2. Ochsner, A. and Mahorner, H. R.: The Modern Treatment of Varicose Veins, Surgery 2:889-902 (Dec.) 1937.

3. Stuebner, R. W.: Varicose Veins and Their Treatment by the Injection Method, Surg., Gynec. and Obst. 51:169-182 (Aug.) 1930.
4. Homans, J.: Surgery of Veins of Legs; Varicosity and Some Problems in Thrombosis, Rhode Island M.J. 28:565-569 (Aug.) 1945.
5. De Takats, G.: Varicose Veins, in Christopher, F.: Textbook of Surgery, Philadelphia, W. B. Saunders Co., 1936.

blood in the saphenous system induces a postural venous hypertension responsible for varicosities of the lower extremities. By the dissection of cadavers, Eger and Casper⁽⁶⁾ showed that the valves of the external iliac veins were absent bilaterally in 36.8 per cent and unilaterally in 52 to 55 per cent. They found that no valves were present in the common iliac veins and the vena cava. The absence of valves in the veins above the orifices of the great saphenous imposes an even greater burden of support on the valves of the saphenous system. Lawes⁽⁷⁾ believed that valvular deficiency is the result of congenital and physical factors.

Adams⁽⁸⁾ has stressed the fact that the increased intra-abdominal pressure produced by such factors as coughing, straining, pregnancy, and abdominal tumors has a dilating effect on the saphenous system. The valve leaflets and vein walls are stretched by repeated increases in the intravenous pressure from above downward, and valvular incompetency and dilatation result. Shafiroff⁽⁹⁾ studied the coagulability of blood in diseased extremities, and found it to be four and a half times greater than that of blood in normal extremities. Chronic lymphedema is thought by Mark⁽¹⁰⁾ to play a dominant role in the pathogenesis of swelling of the legs associated with varicose veins.

Diagnosis and Evaluation

The patient complains of a sense of fatigue in the involved extremity which, after exercise or long standing, often amounts to aching or cramping pains. In many instances there is an annoying amount of ankle edema, which disappears during the night. It is significant that neither the severity of the symptoms nor the amount of swelling present is directly proportionate to the apparent size of the varicosities. Many patients with extremely large veins have few symptoms and no edema. We are convinced that edema which does not completely subside during the night and is not relieved by elevation of the

extremity or external support will result in a hard, brawny induration that is tender and very painful, and is the precursor of ulceration. In nearly all such cases there is some incompetency of the valves of the deep veins.

The numerous tests that have been devised for determining the status of the venous circulation in the extremities are outlined by Harkins and Schug⁽¹¹⁾. We have found that the comparative tourniquet test described by Mahorner and Ochsner⁽¹²⁾ gives adequate information, and we have relied on it alone. In our series of 200 cases, we found that 89 per cent had a positive test and 11 per cent a negative test. This test gives information as to the valvular competency of the superficial venous system, the patency of the deep veins, the degree of involvement of the greater or lesser saphenous systems, and the presence and location of any perforating or communicating branches whose valves are incompetent.

Smithy⁽¹³⁾ stressed the fact that edema of the extremity may make the diagnosis more difficult by masking the presence and severity of varicosities and by interfering with correct interpretation of tourniquet tests. If the edema is due to obstruction or occlusion of a deep vein, the varicosities would be the result of processes producing edema, rather than the cause. He suggested that venographic studies be done on patients who have both edema and varicosities, in order to evaluate clearly the condition of the deep circulation. Incompetency of the deep veins was present in 22 (11 per cent) of our patients, and 27 per cent of these gave a history of having had phlebitis in the past.

Complications

Indolent ulceration and brawny induration of the leg are the most common complications of varicose veins. Of our 200 cases, 30 per cent had ulcers which had been present for periods ranging from less than one year to thirty years. The varicose ulcer is fairly characteristic in appearance and is readily diagnosed, especially when it accompanies the typical picture of varicosities of the lower extremity. However, the lesion must be differentiated from those produced

6. Eger, S. A. and Casper, S. L.: Etiology of Varicose Veins from an Anatomic Aspect. Based on Dissections of 38 Adult Cadavers, J.A.M.A. 123:148-149 (Sept. 18) 1943.
7. Lawes, C. H. W.: Some Problems of Varicose Veins, M. J. Australia 2:685-690 (Nov. 16) 1946.
8. Adams, J. C.: Etiological Factors in Varicose Veins of Lower Extremities, Surg., Gynec. & Obst. 69:717-725 (Dec.) 1939.
9. Shafiroff, B. G. P., Doubilet, H., Barcham, I. S., and Co Tui, F. W.: Coagulability of Venous Blood of Normal and Diseased Legs; Study on 191 Subjects, Ann. Surg. 118:482-486 (Sept.) 1943.
10. Mark, J.: Venography: Its Use in the Differential Diagnosis of the Peripheral Venous Circulation, Ann. Surg. 118: 469-477 (Sept.) 1943.

11. Harkins, H. N. and Schug, R.: Surgical Management of Varicose Veins: Importance of Individualization in Choice of Procedure, Surgery 11:402-421 (March) 1942.
12. Mahorner, H. R. and Ochsner, A.: Modern Treatment of Varicose Veins as Indicated by Comparative Tourniquet Test, Ann. Surg. 107:927-951 (June) 1938.
13. Smithy, H. G.: Complicating Factors in the Surgical Management of Varicose Veins, Surgery 17:590-605 (April) 1945.



Fig. 1(A). This 46-year-old woman had had varicose ulcers of both legs for seventeen years. Moderate-sized varicose veins were present in both legs.



Fig. 1(B). The same patient two months after bilateral high saphenous ligations. The ulcers were treated with Furacin ointment and elastic bandages.

by syphilis, malignancy, and sickle cell anemia. Chronicity is the outstanding feature of varicose ulcers, and they characteristically develop on the medial or lateral aspect of the lower third of the leg, just above the malleoli.

Smithy⁽¹³⁾ stated that "the underlying factor in the causation and perpetuation of varicose ulcers is chronic tissue hypoxia incident to venous stasis." This results in fibrosis and diminution in vascularity, rendering the ulcerative area extremely resistant to treatment. Frequently the greater part of the lower calf is brawny, indurated, discolored, and slightly tender, with a shiny, thin-appearing surface. The ulcers usually weep, producing irritation and eczematoid lesions in the skin surrounding them.

According to Homans⁽¹⁴⁾, this "varicose eczema" is thought to be produced by sensitization of the tissues to foreign protein absorbed from the feet, toes, and nail beds. The antigen is retained, probably, in the edema fluid of the leg for long periods of time. It appears to injure the walls of the arterioles, causing extravasation of blood into the tissues (hence the pigmentation)

and giving rise to a slow necrosis of fat with scar formation. The source of the antigen may be a fungus—namely, trichophyton—, although some cases seem to be caused by a bacterial antigen. We agree with this antigenic theory, since a number of our patients with eczematoid lesions of the skin surrounding ulcers have developed similar lesions on the hands and other parts of the body.

Treatment

In the treatment of varicose veins and ulcers, the primary object is to improve the circulation of the involved extremity by obliterating the valveless saphenous system. Once this is accomplished, the ulcerative lesions tend to heal. The use of scarlet red ointment or Furacin ointment on the ulcer, plus a pressure bandage producing external support over the lesion, facilitates healing. Ochsner⁽¹⁵⁾ believes that the compression of superficial veins by means of bandages increases the flow of blood to the deep veins and overcomes circulatory stasis. The time-honored Unna's paste boot or Gelocast bandage is quite satisfactory (fig. 1). We have advised our patients who have persistent

14. Homans, John: Late Results of Femoral Thrombophlebitis and Their Treatment, *New England J. Med.* 235:249-253 (Aug. 22) 1946.

15. Ochsner, A.: Venous Thrombosis, *J.A.M.A.* 132:827-833 (Dec. 7) 1946.



Fig. 2(A). Healthy granulating varicose ulcers of the lower leg in a 48-year-old woman.



Fig. 2(B). Varicose ulcers healed by pinch grafting.

brawny edema of the extremities to wear elastic bandages or elastic stockings continuously while out of bed. In some cases it may be necessary to apply pinch grafts in order to obtain healing of the ulcer (fig. 2). The edema and disagreeable symptoms have been minimized by such measures.

In certain selected cases, ligation of the superficial femoral vein just distal to its junction with the deep femoral vein is advisable. We have noted a reduction in edema and improvement in symptoms following this procedure but do not have a large enough series of cases to draw definite conclusions.

In this group of 200 cases, 16.5 per cent of the patients had had inadequate ligations or injections or both in the past, and still had severe symptoms. The method we have used, after determining the status of the deep circulation and locating the level of any perforating branches by use of the comparative tourniquet test, has been high ligation of the great saphenous vein and all its tributaries at the sapheno-femoral junction, and local ligations of incompetent communicating branches (fig. 3). Postoperatively, any prominent local varicosities were injected locally with a 5 per cent solution of

sodium morrhuate, a 2 per cent solution of Soricin, or a hypertonic glucose-saline solution. Pressure bandages were applied at the sites of injection. No retrograde injections of any sclerosing agents were done at the time of the original ligations.

Soricin (sodium ricinoleate) was substituted for sodium morrhuate in a small percentage of patients who had a severe local reaction or some generalized reaction to the latter. Hypertonic glucose-saline solution was employed in a few patients who could not tolerate either of the other agents. Cooper⁽¹⁶⁾ has listed many substances used in injection therapy. The sole purpose of such therapy is to damage the intima of the vein by means of a chemical reaction, producing a firm thrombus in the vein which fibroses and obliterates the lumen of the vessel.

We do not recommend that any injections be given prior to ligation of the saphenous vein. Dodd⁽¹⁷⁾ recommended the retrograde injection of 20 cc. of a 3 per cent saline solution at the time of saphenous ligation. Hey-

16. Cooper, W. M.: Clinical Evaluation of Sotradecol, a Sodium Alkyl Sulfate Solution, in the Injection Therapy of Varicose Veins, *Surg., Gynec. & Obst.* 83:647-652 (Nov.) 1946.

17. Dodd, H.: Radical Operation for Varicose Veins, *Brit. M. J.* 2:814-816 (Dec. 23) 1944.



Fig. 3(A). This 49-year-old woman had had varicosities of the greater and lesser saphenous systems of the left leg for twenty years. An incompetent communicating branch was present on the medial side of the lower thigh.



Fig. 3(B). Leg of the same patient two weeks after high and low saphenous ligations were done. Several subsequent injections of a 5 per cent solution of sodium morrhuate were given to obliterate the few remaining varicosities in the lower leg.

erdale⁽¹⁸⁾ advocated a similar type of injection with sodium morrhuate; however, Tunick⁽¹⁹⁾ and Harkins⁽¹¹⁾ were opposed to any injections during operation and believed that varying degrees of arterial spasm in the extremity commonly follow retrograde injections of sclerosing agents. Harkins felt that such treatment may be so painful and cause so much reaction that the patient may be forced to go to bed, thus increasing the danger of embolism.

Homans⁽⁴⁾ recommended high and low ligations, with early ambulation to prevent secondary thrombosis and embolism. In our group the ligations were performed under local Novocain anesthesia, and the patients were allowed to walk immediately after operation. They were encouraged to remain ambulatory during their entire postoperative period, while local injections were being given.

Surgical technique

Our practice has been to expose the upper

saphenous segment through a longitudinal incision extending from just below Poupart's ligament distally for approximately three and a half inches over the palpable groove in which lies the main vein trunk. Through this incision the saphenous vein and all of its uppermost tributaries can be dissected cleanly, clamped, resected, and ligated. If difficulty is encountered in identifying the saphenous vein, it has been our experience that a search in the more medial aspect of the wound will usually lead to its discovery.

The anatomic arrangement of the saphenous and its tributaries is so bizarre that no two cases demonstrate a similar pattern. Lawes⁽⁷⁾ used the term "varicose anatomy" in describing the arrangement of the five main tributaries—namely, medial and lateral femoral cutaneous, and three superficial branches (external pudendal, circumflex iliac, and epigastric). Buxton⁽²⁰⁾ pointed out various deviations from the normal in the tributaries of the upper saphenous network. It is necessary that all of these branches be

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19. Tunick, I. S., Nach, R. L., and Weinle, I.: Arterial Spasm Secondary to Ligation and Retrograde Injection of Saphenous Vein, Surgery 17:413-418 (March) 1945.

20. Buxton, R. W., Farris, J. M., Moyer, C. A., and Collier, F. A.: Surgical Treatment of Long-Standing Deep Phlebitis of Leg; Preliminary Report, Surgery 15:749-756 (May) 1941.

dissected out meticulously and ligated. If any principal branch is omitted, it may become so dilated as to cause subsequent involvement of the veins distal to it, and recurrence of varicosities in the involved extremity. It is not uncommon, particularly in patients who have had phlebitis, to find the regional femoral lymph nodes enlarged at the time of vein ligation.

A maneuver we have found helpful in the dissection of the upper saphenous segment is to clamp and ligate the main trunk in the distal part of the operative field. Then, by retracting the proximal segment upward and using blunt and sharp dissection along the posterior portion of the vein, all of the branches can be demonstrated easily, clamped and ligated. This method is advocated also by Zax⁽²¹⁾.

After the dissection is completed, the saphenous trunk is doubly ligated as close to its entrance into the femoral vein as possible, and a 2- to 3-mm. cuff of vein is left distal to the ligature. The subcutaneous fascia is closed with a fine continuous catgut suture to lessen tension on the skin sutures. Any communicating branches which are present along the distal portion of the saphenous system are dissected and ligated through separate small incisions.

Hodge, Grimson and Schiebel⁽²²⁾ advocated a vein-stripping procedure in certain selected cases. We have not employed this type of treatment in this group of cases.

Results of Treatment

In this series of 200 cases, high saphenous ligation with subsequent local injection therapy produced improvement in symptoms and physical findings in 169 patients (84.5 per cent). The majority of patients received from one to ten injections to obliterate remaining varicosities. In patients with ulcer, local treatment to the lesions was required in order to obtain healing. In 7 cases the ulcer recurred or failed to heal, even after prolonged treatment. In 2 cases ulcers healed completely after pinch grafting was done.

In 22 cases (11 per cent) incompetency of the deep veins was demonstrated. Upper saphenous ligations produced amelioration of symptoms, reduction of edema, and im-

provement in ulcers in 5 of these patients. Homans⁽⁴⁾ stated that "in-as-much as the high pressure and congestion in varicosities of the superficial system always adds to the load on the deep circulation, any procedure which decreases that load must be helpful."

Five patients who showed no definite involvement of the deep venous system continued to have some edema after prolonged treatment. In 4 cases recanalization of the superficial system occurred, requiring repeated local injections to maintain obliteration of this system.

The less satisfactory results were obtained in those patients who had deep vein involvement with long-standing ulcerations. Such patients were advised to use external supportive bandages indefinitely to control symptoms.

Summary and Conclusions

A study of 200 patients with varicose veins and their complications revealed the following facts:

1. The disease occurred more frequently in women than in men, and involved one extremity more often than both. The greatest number of cases occurred in patients between 30 and 35 years of age. The average duration of the disease was seven and a half years. Approximately one third of the patients had ulcers.

2. In 49 per cent of 162 cases, a family history of varicosities was obtained.

3. The Ochsner-Mahorner comparative tourniquet test was employed preoperatively to determine the status of the venous circulation of the extremity and the location of communicating branches whose valves were incompetent.

4. Good results were obtained in 84.5 per cent of the cases after saphenous ligation and subsequent local injection of varicosities.

5. In patients with persistent edema of the lower extremities, edema was controlled to a great extent by constricting elastic bandages or stockings. It is perhaps advisable for this group of patients to have superficial femoral ligations.

Obesity is prejudicial to long life. Of the individuals that have lived to a ripe old age, how many have you seen that are much overweight? Very few, I venture to say. The very old person is almost invariably lean and often very thin.—Theodore Klumpp: *The Future of the Older Worker*, *Geriatrics* 2:166 (May-June) 1947.

21. Zax, E.: Terminal Saphenous Resection: Report on over 300 Cases, *Texas State J. Med.* 41:307-309 (Oct.) 1945.

22. Hodge, G. B., Grimson, K. S., and Schiebel, H. M.: Treatment of Varicose Veins by Stripping, Excision and Evulsion, *Ann. Surg.* 121:737-750 (May) 1945.

PRESENT STATUS OF THE STUDY OF HUMAN FATIGUE

A. T. MILLER, JR.

CHAPEL HILL

The present status of the study of human fatigue is one of confusion. Much of this confusion is due to lack of a precise definition of fatigue. To some, fatigue means a reduced capacity for work, resulting from previous work. That this concept is too narrow is obvious from the fact that many disease states produce an identical condition in resting subjects. Is this fatigue? Unless the condition is to be defined purely in terms of the causal factor, the answer must be *yes*. Again, this narrow concept of fatigue makes insufficient allowance for the concomitant impact of other environmental stresses, such as high temperature and humidity. Since the severity of fatigue following a standard amount of work in the same subject varies widely with environmental and sociologic factors (worry, incentive, and so forth), attempts to quantitate fatigue in terms of work have limited practical significance. It is long past time to abandon the naive attempt to explain human fatigue on the same basis as fatigue in the isolated nerve-muscle preparations of the physiologic laboratory.

Reduction in working capacity may also fail, in many cases, to indicate the severity of fatigue. The stumbling block here is the difficulty in evaluating the influence of incentive. In studies on acute exhaustion in our laboratory we have been unable to correlate the subjective impressions of the subject with any measurable physiologic factor. The increased productive output of industrial workers toward the end of a working day is a common example of the influence of incentive. Until incentive can be measured and assigned its proper weight in a total evaluation of contributory factors, any analysis of human fatigue must be incomplete.

Suggested Criteria of Fatigue

In view of these considerations, it is apparent that the study of human fatigue must, for the present, be largely empiric. The first requirement is general acceptance of some criterion of fatigue. In general, criteria ad-

vocated by various workers fall into three categories: (1) decrease in work capacity, (2) measurable physiologic changes, and (3) subjective impressions of the subject. It is well to examine the evidence supporting each of these concepts.

Decrease in work capacity

The basic assumption is made that the extent of the decrease in work capacity is directly correlated with the severity of fatigue—in fact, that it *is* fatigue. This assumption seems to be true, however, only in the case of exhausting physical exertion, and even here the correlation is often very poor. In exhaustion experiments in our laboratory the subjects have not been able to attribute their complete loss of capacity for further work to any single factor; for the most part minor discomforts, such as drying of the respiratory mucosa, stand out in their minds. Inability to make their muscles continue to work is rarely reported.

Work capacity is diminished under conditions of high temperature and humidity, and in anoxia, hypoglycemia, dehydration, starvation, and certain diseases, notably Addison's disease and myasthenia gravis. To consider that all of these diverse conditions represent a state of fatigue would make the term "fatigue" so broad as to be devoid of precise scientific meaning. One is forced to conclude that a reduced capacity for work is not synonymous with fatigue, and that it may not even afford a good index of the presence of fatigue. The most one can say is that reduced capacity for work and subjective impressions of discomfort and disinclination for work frequently occur together. There is no conclusive evidence that they are causally related in any way.

Measurable physiologic changes

Physiologists like to measure things. It is only natural, then, that they have searched for quantitative changes in the composition of body tissues and fluids and in the normal functioning of the body machinery which would indicate the presence (and perhaps the cause) of fatigue. This aspect of the fatigue problem has been enthusiastically explored, and a mass of data is available. Attempts to formulate a concept of the nature of fatigue on the basis of these data have, for the most part, been disappointing. For example, by analogy with the correlation between loss of work capacity and the accum-

From the Department of Physiology, School of Medicine, and Laboratory of Applied Physiology, University of North Carolina.

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

ulation of lactic acid in isolated frog muscles, blood lactic acid has been measured in many studies on fatigue. On superficial analysis a plausible argument for acidosis as a causal factor in fatigue can be established, since physical exhaustion is usually accompanied by a high blood lactate value. This argument is weakened, however, by the facts that similar degrees of acidosis produced in other ways do not result in exhaustion, and that fatigue can occur with relatively little acidosis. In like manner, the claims for a causal relation between fatigue and deficiency in cardiac output, oxygen consumption, blood sugar, and so forth can be shown to be of doubtful validity. One is forced to conclude that the physiologic basis of fatigue is much more subtle than these gross alterations in function, and refuge must be taken in the vague concept of a disturbance in integration or in homeostasis. The physiologist may finally have to abandon his search with physiologic tools and adopt those of the psychologist.

Subjective impressions

The traditional concept of fatigue includes a feeling of tiredness and disinclination for further exertion. The proper place of these subjective factors in the picture of fatigue is controversial. The physiologist has usually minimized their importance because they defy objective measurement. A more valid reason is the frequent lack of correlation between subjective impressions and objective performance. Individuals vary widely in their reaction to minor discomforts associated with stress of the same intensity, and correspondingly different degrees of fatigue would be reported by these subjects. Also, subjective discomfort in a single individual varies not only with the intensity of the applied stress but also with his interest in the task being performed.

The modern psychologic approach, on the other hand, emphasizes the essentially personal nature of fatigue. It holds that only the subject himself can judge the extent of his fatigue, and that physiologic changes are merely associated phenomena. The obvious difficulty in the practical application of this concept is in evaluating the "discomfort threshold" of different subjects. In our laboratory we hope to place this on a semi-quantitative basis by measuring pain thresholds of perception and of reaction with the Hardy-Wolff technique.

Possible Experimental Approaches to the Study of Fatigue

The goal of research on fatigue is two-fold: (1) an understanding of the real nature of the condition and of the factors which cause or modify it, and (2) practical means of minimizing the fatigue associated with daily activities or disease. As in the case of all human ailments, treatment not based on a true understanding of the nature of the condition being treated must be largely empiric. It is not surprising, then, that attempts to prevent or alleviate fatigue have run the gamut from vitamins to amino acids. It is also not surprising that these remedies have been almost uniformly unsuccessful. It would seem, then, that attention should be diverted away from treatment and toward an attempt to discover the basic factors responsible for fatigue. To do this, we must first be able to recognize fatigue when it occurs, and further be able to estimate its severity. In other words, we must agree on a criterion of fatigue. Since all the traditional criteria have been shown to be inadequate when used independently, a valid criterion must be sought either in a synthesis of the traditional criteria, or in some entirely new factor. Both of these possibilities deserve to be thoroughly explored. The approach might well follow this course:

(1) A tabulation of all the major stresses whose impact on the human body produces a condition having one or more of the traditional aspects of fatigue.

(2) A careful measurement of physiologic and psychologic changes accompanying these various stresses.

(3) Selection of one or more factors which occur in all or most of the different stress reactions.

(4) A restudy of graded intensities of the various stresses using the selected factors as tentative criteria.

(5) If the tentative criteria vary in a consistent and quantitative manner with the intensity of the stress, they may be adopted as working criteria and the final step undertaken—namely, an attempt to determine the cause of the variation in the working criteria.

This may appear to be a laborious process, and indeed it is. But it is doubtful whether the final goal can be achieved by any other route, and the sooner it is undertaken, the

sooner will the race be won. Then, and only then, can the therapeutic approach to fatigue be based on logical principles rather than on trial-and-error empiricism.

Discussion

Dr. J. H. Ferguson (Chapel Hill): Fatigue presents itself in our clinical practice as the problem of **asthenia**, and I should like to extend Dr. Miller's splendid presentation of physiologic fundamentals by a brief comment on three points of practical clinical significance. These are the relationships to (1) **nutrition** and **metabolism**, (2) **anoxia** and (3) **endocrines**.

In studying problems of **nutrition** in relation to industrial capacity, we see **asthenia** related to an inadequate supply of calories, proteins, and vitamins. Even if Dr. Miller is strictly correct in separating reduced capacity for work and the fatigue problem, the two are, nevertheless, inextricably associated under these conditions. Men cannot reach the heights of their potential capacities for thinking and social behavior if nutritional problems and the basic struggle for physical survival sap their physical, mental, and psychologic activities, and when frustration of the elementary physical goal of body maintenance leads to fatigue, apathy, helplessness, and reduced physical capacity, the **asthenia** problem is as real as it is severe and complex. The physiologist can at least make the contribution of insisting on nutritional and metabolic correction as prerequisite for approach to the psychological and socio-political angles.

Specific **asthenic** problems arise in connection with **nutritional** and **metabolic disfunctions** in diabetes, in gastro-intestinal, digestive, liver and kidney disorders, and in a host of other diseases. Here, indeed, we are on sure ground as to the first line of treatment.

The problem of **anoxia**, acute and chronic, presents itself in very many diseases. The **asthenia** of all debilitating illnesses involves some aspect of **anoxia**, which we can consider under several logical heads:

1. Failure to oxygenate the blood properly, as in inadequate atmospheres, and in lung and heart conditions
2. Reduced oxygen-carrying capacity of the blood, as in anemias
3. Inadequate blood (and hence oxygen) supply to tissues, either
 - (a) generally, as in circulatory disturbances, or
 - (b) locally, as in venous obstruction in a leg
4. Inability of the tissues properly to utilize the oxygen which the blood brings to them, as in various toxic conditions.

Again, the practical problem clearly is a matter of restoring normal respiratory, circulatory, and tissue metabolic activity as a primary requisite for combatting the **asthenia**. During the **asthenic** period, the performance limitations of the patient must receive full recognition, sympathy, and attention, including the best possible nursing care. The mental and psychologic factors are very important in the **anoxic** patient. The better the care, the greater the amelioration of symptoms and the speedier the recovery.

Lastly, some specific relationships of **endocrines** to **asthenia** will be mentioned, and I will center my remarks around adrenal cortical hormones and the anterior pituitary. Since we are all familiar with the extreme **asthenia** resulting from severe deficiency

of adrenal cortical hormones, as in Addison's disease, I will talk on the broader aspects.

Prolonged physical exercise will cause **hypertrophy** of the adrenal cortex. In Ingle's experiments on rats raising a 100 Gm. weight repeatedly for 120 hours, the weight of the adrenals was nearly doubled (increasing from 26 to 50 mg.).

Adrenalectomized animals, like human patients with Addison's disease, are decidedly **asthenic** and notoriously sensitive to various types of stress, especially infections, trauma, cold, and anoxia. The amount of adrenal cortical hormone needed to keep them alive is greatly increased if they exercise or suffer any of the above stress conditions.

Control of the adrenal cortical hormone by the anterior pituitary is one of the many physiologic functions of "the master endocrine gland." It is through such controls over a number of endocrines, together with certain direct metabolic and nervous controls, that the body mobilizes its defenses against stress conditions. Let us consider infections, for instance.

Enlargement of the adrenal cortex and depletion of its lipoids occur in many inflammatory diseases. Rich (of Johns Hopkins) regularly found histopathologic lesions in the adrenal cortex of patients dying from meningitis, pneumonia, diphtheria, and streptococcal infections. In the classical Waterhouse-Friderichsen syndrome associated with certain cases of meningitis, adrenal cortical damage with hemorrhagic lesions is pathognomonic. Rich found no such lesions in cases of circulatory collapse from traumatic shock. It does seem, then, that the **asthenia** of patients acutely ill from severe infections has much to do with the adrenal cortical hormones. We do not know the exact significance of the high content of cholesterol and ascorbic acid in the normal adrenal cortex, but there is evidence that both are related to synthesis of the hormonal steroids. Savers and others have shown that these two substances decrease following hemorrhage, extremes of temperature, trauma, and anoxia. Following acute stress conditions such as infections, burns, and major operations, the urinary excretion of 17-ketosteroids is increased (as much as ten times), and this increase may have a significant relation to the adrenal cortex.

Vollmer and Gilmore reported that mice withstand mild pneumococcal infections better if given injections of adrenal cortical hormone, but the hormone does not seem to help in more severe infections, where it is needed most.

Adrenalectomized rats at a barometric pressure of 300 mm. of mercury need 20 times as much adrenal cortical hormone to survive. Thorn found that only 8 per cent of normal rats survived pressures equivalent to an altitude of 32,000 feet, whereas 85 per cent survived if given adequate ACH. There is also evidence that the anterior pituitary hormones increase in anoxia.

All that I have said adds up to the fact that physical stress of many kinds is intimately connected with the **asthenia** or fatigue problem. The body has various physiologic adjustments involving metabolic, respiratory, circulatory, and nervous and endocrine factors. It is of obvious clinical importance to do everything possible to give such factors free play and boost them with all measures and agents we can command.

Chairman Ruffin: Some years ago we were told that when a patient complained of being tired he should be given thiamine. You do not believe that?

Dr. Miller: Only if he has a thiamine deficiency to start with.

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NOVEMBER, 1948

THE FORSYTH COUNTY RESOLUTIONS

When the selective service act passed by the Eightieth Congress was being drawn up, it provided that all doctors under 45 should be drafted. Only the most determined effort on the part of officials of the American Medical Association, and the assurance on their part that a sufficient number of medical officers would be obtained by voluntary enlistments, kept this part of the bill from being enacted into law.

Now that our profession has been again entrusted with the job of furnishing its quota for the new selective service, it is necessary to work out some means of helping the doctors themselves decide whether they are needed more in service or in civilian life. If some plan to insure an adequate number of volunteers for medical service in the armed forces is not put into effect soon,

the next Congress will almost certainly make provision for a draft of doctors. It is doubtful that a plan drawn up by politicians could be as equitable as one worked out by doctors themselves.

With this idea in mind, the Forsyth County Medical Society appointed a Committee on Military Affairs to work out a suitable formula for the voluntary enlistment of medical officers. This committee was selected with great care, in order to have every possible viewpoint represented: men who had been in service and those who had not; medical teachers and private practitioners; general practitioners and specialists.

The committee devoted many hours to the task, and their final plan was adopted unanimously by the Forsyth County Medical Society. A copy was then sent to the Executive Committee of the State Society, where it received very favorable comment. One veteran of both World Wars said that it was the fairest plan he had ever seen for selecting medical personnel for the armed forces. Copies were also sent to the secretary of every State Medical Society in the country, and to Dr. Harold R. Hennessy, secretary of the Council on National Emergency Medical Service of the American Medical Association. Dr. Hennessy's reaction was most favorable, as is evidenced by a few excerpts from a letter to Dr. L. C. Ogburn, chairman of the Forsyth County committee:

"Copies of the report from the Military Affairs Committee of the Forsyth County Medical Society have been received. I am very much impressed and have taken the privilege of sending advance copies to members of our Executive Committee. I am also having two hundred copies mimeographed, with the view in mind of sending them out to some of the other state committees.

"I was in Indianapolis yesterday and talked before a group of veteran medical officers. The idea of a point system as mentioned by you met with their favor . . .

"It would seem wise to me that your delegates to the St. Louis meeting be pretty well informed about your thinking in this matter. If they are in sympathy with you a great deal more can be accomplished."

It is with great pride that the NORTH CAROLINA MEDICAL JOURNAL publishes the Forsyth County Medical Society's plan on page 589 of this issue, and urges that our delegates to the St. Louis convention recommend its adoption by the American Medical Association.

SOME ELECTION REFLECTIONS

Apparently President Harry Truman was the only person in the United States who was not surprised to learn that he is to be given another four-year lease on the White House and the assurance that, for two years at least, he will have a comfortable majority of Democrats in both houses of Congress. The professional prophets and interpreters of public opinion are having a hard time explaining just what took place. It is not the intention of this journal to account for the election returns, but merely to offer some random reflections as to the possible repercussions upon medical practice in this country.

First of all it is in order to pay a tribute to the courage which President Truman displayed in winning the nomination and the election. It is quite likely that admiration for his fighting qualities won a good many votes for him.

Now that the voters of the country have returned their verdict, petty partisan politics should be forgotten, until the next election, at least. There are many objectives of the present administration which every patriotic citizen can and should endorse. No man or party is infallible, however, and there is no lack of patriotism in those who oppose with all possible vigor proposed measures which they honestly believe would be detrimental to the welfare of our country. In Britain "His Majesty's Loyal Opposition" serves a very useful purpose. A loyal opposition is also needed in the United States.

It is certain that the attempt to enact some form of compulsory national health insurance will be repeated, and there is grave danger that it will succeed. For more than ten years a bill calling for some form of socialized medicine has been introduced in each successive Congress, and has always died in committee. President Roosevelt, be it remembered, never recommended compulsory sickness insurance. President Truman has repeatedly declared himself in favor of it. Therefore we need expect no let up in the efforts of federal employees to convince the people of this country that they are getting an inferior brand of medical care from a selfish, inefficient body of men—and that the proper remedy for the situation is to put the

doctors under the supervision of Washington bureaucrats.

Those who do not wish to see the domination of medicine by the Federal Security Agency must prepare to oppose an all-out attempt to force a National Health Bill through Congress. In football terms, only a determined stand, possibly on the one-yard line, can prevent a victory by the proponents of socialized medicine. Let it be remembered that in 1946, 45,000 employees of the federal government gave part or all of their time and spent seventy-five million dollars for propaganda. These same federal employees will continue to have access to millions of dollars of tax money to continue their fight for government control of medicine.

In spite of the apparent odds against the private practice of medicine, the medical profession should not be overcome by a spirit of defeatism and give up the fight. There are too many reasons for encouragement. One is the phenomenal growth of the voluntary insurance plans in the United States. The greater the number of people protected by such plans, the less spontaneous pressure there will be for compulsory government insurance. There is good cause to believe that within a very short time most of the self-supporting people in the country will be protected by some form of voluntary medical care insurance. As for the indigent, no bill has yet been introduced in Congress to provide for their care by any scheme of socialized medicine.

Another reason for encouragement is the growing recognition of the general practitioner's importance to the medical profession. It was the threatened shortage of family doctors that made many laymen receptive to the idea of having a Government agency which would compel medical men to practice where and how they were ordered. With all the resources of the medical profession enlisted in maintaining a proper balance between family doctors and specialists, there is now little danger that John Q. Public will be deprived of his family medical adviser.

A somewhat indirect encouragement comes from across the water. In spite of efforts to suppress unfavorable reports, it is becoming evident that England's "noble experiment" in "nationalizing" medicine, along with railroads, banks, and coal mines, is not

too successful—even with the aid of millions of dollars from this country. It is now fairly well known also that the New Zealand trial of socialized medicine was a great disappointment to all concerned.

It is encouraging, also, to know that the overwhelming majority of doctors in the country are opposed to being regimented by the government. The results of the primary in Oregon⁽¹⁾ should convince anyone that doctors can exert tremendous political influence when they are aroused.

Every doctor should ask himself what he as an individual can do to prevent the tragedy of having the government take over the practice of medicine. One of the most important and effective things he can do is to tell his representative and senator how he feels about the matter. A doctor who is the personal physician of a member of Congress has an unusual opportunity for missionary work; but any doctor can write letters to his congressmen. If such letters are numerous enough, they will carry great weight.

Doctors can help by talking to their patients and friends, and giving them the truth about the matter. The gross intellectual dishonesty used in distorting the selective service rejection figures, as exposed by Dr. Maurice Freedman in the *Reader's Digest*, should be made known. The public should know of the dissatisfaction with the British National Health Insurance Plan. People should be reminded of the ineffectiveness and wastefulness of government medicine as practiced in many V.A. hospitals. They should know that if the present administration is given the chance to inaugurate a medical care plan in this country, it would be controlled by the Federal Security Agency, which in turn is dominated by a layman. Business and professional men should be reminded that socialization would not stop with medicine, but that other groups would be brought under government control, just as they have been in England.

Finally, every doctor can contribute to the National Physicians Committee, 75 East Wacker Drive, Chicago. This organization has done most effective work in the past to combat the threat of political medicine. It has the experience, the equipment, and the

"know-how" to offer determined and effective resistance to the next inevitable version of the Wagner-Murray-Dingell Bill.

* * *

DR. HAMILTON MCKAY—PRESIDENT-ELECT OF THE SOUTHERN MEDICAL ASSOCIATION

Just as the NORTH CAROLINA MEDICAL JOURNAL was going to press, word was received that at the recent annual session of the Southern Medical Association Dr. Hamilton McKay of Charlotte was chosen president-elect. This honor comes as no surprise to the many friends of Dr. McKay, who has long been active in the affairs of the Southern Medical Association. His professional and personal qualifications eminently fit him for this high office.

North Carolina has reason to be proud of Hamilton McKay. The NORTH CAROLINA MEDICAL JOURNAL, on behalf of the doctors of North Carolina, offers congratulations to him upon this honor, and also congratulates the delegates to the Southern Medical Association upon their good judgment in selecting him for this position of leadership. In honoring him, they have honored the medical profession of North Carolina.

* * *

A NEW COVER FOR THE JOURNAL

For the first time since the second month of its publication, the cover design of the NORTH CAROLINA MEDICAL JOURNAL has been changed. The change was made, with some misgiving and after long deliberation on the part of the editorial board, as a concession to the constantly mounting costs of publication. Most of the cost of printing the JOURNAL is met by the revenue from advertisements. The space on the lower half of the front cover is the most desirable spot from the advertiser's viewpoint. Many other state journals have led the way in accepting advertisements for this location, and our editorial board felt that it should take advantage of the opportunity to bring a few more shekels into the treasury of the Society.

The new cover design was suggested by Mr. Bob Blake, of the Duke University Department of Medical Illustration, under the direction of Mr. Elon Clark. It is hoped that our readers will like the new cover; it is certain that our business manager will.

1. Dewey on Socialized Medicine, Editorial, North Carolina M. J. 9:356 (July) 1948.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF
WAKE FOREST COLLEGE

A 4-year-old white boy was admitted to the hospital because of diarrhea and anemia of two months' duration.

He had never been healthy. He sat alone at 1 year of age and walked at 2 years. There was no evidence of mental retardation. He had had recurrent infections since the age of 3 months. Chronic otitis media had been present for three years, and he had had at least three attacks of pneumonia. The socioeconomic and family histories were non-contributory.

*The present illness began insidiously two months prior to admission, when he had a few loose stools. An intermittent fever developed and persisted. The diarrhea gradually became more severe until the stools were almost continuous. These were said to have been loose, foul, slimy, and green in color. No blood had been noted. He became pale and lost considerable weight in spite of a fair caloric intake. Sulfadiazine and penicillin had failed to alter the number of stools, the fever, or his general condition.

Physical examination at the time of admission showed an emaciated child who was obviously seriously ill. The temperature was 101.2 F. The blood pressure was 90 systolic, 68 diastolic. The height was normal for his age, but he was 12 pounds underweight. There was a purulent discharge from the left ear. The lungs were clear. Except for tachycardia the heart was normal. The abdomen was distended and tympanitic. The spleen was not palpable. The liver was felt 3 cm. below the right costal margin. No other masses were present.

Laboratory studies revealed a severe anemia which was hypochromic and microcytic in type. There were 21,200 leukocytes, with a normal differential count. The urine was within normal limits. The total serum protein was 3.8 Gm. per 100 cc., the carbon dioxide combining power 40 volumes per cent, and the blood chlorides 504 mg. per 100 cc. The Kahn test was negative, as were three tuberculin tests.

During the first three weeks in the hospital no blood was noted in the stools, and no ova or parasites were found. Cultures revealed no pathogens. No excess fat was

present, and the stools contained trypsin. Toward the end of the illness *Giardia lamblia* were found, and a paracolon bacillus and *Shigella dispar* were cultured from the stools. Barium enema examination was unsatisfactory because of the child's inability to cooperate. Proctoscopic examination showed an extensive granular lesion which was indurated, friable, and ulcerated. No amebae were found either in the stool or by direct smear from the lesion.

The course was downhill, although at one time there was slight improvement. The only additional finding was that of a mass in the right lower quadrant which varied in size from day to day. There was at no time any clear-cut abdominal tenderness. All types of therapy were tried without success. Feeding, starvation, antibiotics, and chemotherapeutic agents failed to affect the course. The fluid and electrolyte balance was maintained within normal limits by parenteral therapy. The patient gradually became weaker and died quietly five weeks after admission.

Clinical Discussion

DR. WESTON M. KELSEY: Dr. Cayer called me shortly after he had done a proctoscopic examination on this patient and told me to be certain to see the next proctoscopy, as such a lesion was most unusual. It was a remarkable sight, and I have been unable to find anything in the literature which seems to fit this history. I believe that the history of retardation since birth has little to do with this child's present illness. With this simplification, we have a child with diarrhea and an extensive rectal mass, and the problem in diagnosis could be settled if we knew which appeared first.

There seems to be considerable evidence that the mass was primary. The lesion certainly looked as if it were more than two months old, and a longer duration would fit in with the vague history of weakness prior to the onset of diarrhea. I know of no infectious disease which produces this type of lesion. Probably the most suggestive evidence is that all of the experienced proctologists who saw the lesion commented that in an adult it would be considered malignant until proven otherwise. There is some doubt as to the pathogenicity of *Giardia lamblia*, *Shigella dispar*, and the paracolon bacilli. Certainly there is no evidence that they are capable of causing a fungating mass such

as this child had. It is my impression that in a majority of cases they are probably secondary invaders in an already diseased gastrointestinal tract.

Tuberculosis could produce this lesion, but repeatedly negative tuberculin tests are strongly against this diagnosis, as is the absence of demonstrable tuberculosis elsewhere. I found two reports of chronic amebiasis in adults which produced a mass that was mistaken for carcinoma. These patients had had the disease for years. The repeated negative examinations in our patient are excellent evidence against his having amebiasis. Nothing in the laboratory findings pointed to a metabolic type of diarrhea, and these diarrheas have not been associated with gross lesions of this type.

The diagnosis would seem to be between ulcerative colitis and a neoplastic process. In the absence of a biopsy, I know of no way in which a definite diagnosis could be made. The course was more rapid than the usual one of ulcerative colitis in childhood. Certainly the extent of the local lesion is far greater than one would expect in ulcerative colitis of this duration. A brief survey of the literature on neoplastic disease of the colon and rectum in childhood surprised me. About 50 cases of such neoplasms are described. Several of these patients had illnesses similar to this child's. I remember a case presented here last year in which Hodgkin's disease produced a mass in the cecum. That child had had severe diarrhea for a month. Multiple polyposis should be mentioned, though I could find no cases in which carcinomatous degeneration occurred at this early an age.

My diagnosis when the patient was on the wards was ulcerative colitis. Primarily because the lesion looked malignant, I am going to change the diagnosis (with considerable misgiving) and guess that he had a neoplastic process of an undetermined type.

Would Dr. Cayer discuss this case?

DR. DAVID CAYER: Proctoscopic examination of this child revealed most extensive changes. The entire lumen of the bowel was diffusely involved with hyperplastic, necrotic, friable lesions in which ulcers approximately .3 to 4 cm. in length, 1 cm. in width, and 0.5 cm. in depth were seen. The lesions were covered with a mucopurulent and bloody exudate. Because of the obvious narrowing and friable condition of the bowel

and the fear of perforation, no attempt was made to advance the proctoscope beyond a distance of 7 or 8 cm. It was felt at the time of the first examination that a biopsy was indicated. When a repeat proctoscopic examination was done during the next week, however, the lesion had subsided considerably. It then had the appearance of a severe ulcerative colitis rather than malignancy. It was also noted at this time that the sphincter was involved, and remained patent and atonic after the proctoscope was removed.

An attempt was made to estimate the extent of the lesion by barium enema examination, but the child was unable to retain the barium. While neoplastic growths in the rectum may be manifested by numerous bloody mucoid discharges accompanied by some fecal material, the rapid passage of food and material through the gastrointestinal tract in this child suggests an extensive involvement of the bowel. The change in the proctoscopic picture over a period of one week, as well as the fact that the lesion involved the rectal sphincter and possibly the right side of the colon, indicates that ulcerative colitis would be the most likely diagnosis. In addition, ulcerative colitis is more frequent than a primary bowel malignancy in a child. It is my impression that this represented a severe instance of extensive ulcerative colitis.

DR. KELSEY: I agree that the rapidity with which the food traversed the intestines suggests an extensive intestinal lesion. However, a relatively small or localized lesion can cause severe diarrhea in childhood.

Anatomic Discussion

DR. R. P. MOREHEAD: The findings at autopsy in this case were essentially those seen in advanced cases of chronic ulcerative colitis. The entire colon, as well as the distal portion of the ileum and rectum, was involved. The wall of the bowel was greatly thickened and indurated on its mesenteric border, and the regional lymph nodes were extensively involved. Fibrous and fibrinous adhesions were noted throughout the abdomen, and in the vicinity of the cecum adjacent loops of bowel were intimately adherent to surrounding structures. These structures, together with the greatly enlarged regional lymph nodes, made up the mass noted clinically.

Chronic ulcerative colitis is an uncommon

disease in children⁽¹⁾. It does not appear to differ fundamentally, however, from the disease more frequently encountered in adults.

Provisional Anatomic Diagnoses

1. *Chronic ulcerative colitis, proctitis, and ileitis involving the entire colon and rectum, and 30 cm. of the ileum.*
2. Acute and chronic mesenteric lymphadenitis with foci of suppuration.
3. Pleural adhesions, bilateral, obliterative in type.
4. Generalized peritonitis.
5. Hydropericardium.

1. (a) Smith, R. M.: Chronic Idiopathic Ulcerative Colitis in Children. *New England J. Med.* 217:511-516 (Sept. 30) 1947. (b) Elitzak, J. and Wideman, A. H.: Nonspecific Ulcerative Colitis in Childhood. *Am. J. Dis. Child.* 62:115-126 (July) 1941. (c) Litvak, A. M. and Levy, H.: Nonspecific Ulcerative Colitis in Childhood. *Arch. Pediat.* 61:293-299 (June) 1944. (d) Paulson, M.: The Present Status of Idiopathic Ulcerative Colitis, with Special Reference to Etiology. *J.A.M.A.* 101:1687-1694 (Nov. 25) 1933.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI

November, 1948

No. 11

THE LAG between knowledge and practice is nowhere better illustrated than in the slowness with which general hospitals have instituted the routine chest X-ray examination of all patients at the time of admission. Yet everyone benefits when this is done—the patient, the professional staff, the hospital employees and the community.

X-RAY PROGRAMS IN GENERAL HOSPITALS

Hospitals should institute X-ray examinations of all admissions. The hospital can render this health service, which is essential for the protection of the public health, better than any other agency.

Chest X-ray surveys can be conducted in hospitals much more easily, economically, and quickly than in other groups. Hospitals also offer ideal opportunities for intensive case-finding. Most of the entering patients are free from tuberculosis, but some will have tuberculosis in its earliest stages and a few previously undiagnosed advanced cases will be found.

In 1946, more than 15,000,000 people—more than 10 per cent of the total population—spent some time as patients in hospitals. This means that a new hospital patient was admitted every two seconds. In the same year nearly 2,000,000 new citizens were born in the 7,000 hospitals of this country. Millions more are treated as outpatients in the clinics. Each patient admitted should have the benefit of a chest X-ray.

Tuberculosis is often considered a disease of youth. Contrary to this opinion, however, mortality figures in the United States show the highest death rate from tuberculosis occurring in the 70-year age

group. Too few persons—even among those engaged in tuberculosis control—recognize the fact that the phenomenal decrease in the death rate among younger persons has not been accompanied by a similar decline among the aged. Yet the trend in the death rate from tuberculosis increases with each five year age group from 15 to 75. Tuberculosis among the elderly is frequently masked by the infirmities of age. It is often difficult to interest elderly people in a physical examination. These same elderly people, however, make up a large proportion of admissions to general hospitals. Here is the opportunity to begin work on the difficult and enormous problem of finding tuberculosis among the elderly.

A general hospital has three compelling reasons for taking X-rays of all patients and personnel. First, to serve its community as a case-finding center. Second, to protect its employees from the spread of tuberculosis infection by patients. Third, to protect the patients from contracting tuberculosis infection from other patients or from the personnel.

Whenever a patient with unrecognized open tuberculosis is admitted to a hospital he becomes a menace to some of the personnel in the institution. This hazard can be avoided only by routine chest X-ray examinations made on admission. Otherwise proper precautions against contagion cannot be taken.

Nurses entering training should and do have careful physical examinations and chest X-rays to assure that they are free of tuberculosis. During training, however, many contract infection from hospital patients. The only preventive for this tragic accident is admission X-raying of every patient.

With a thorough case-finding procedure among personnel and routine X-raying of all admissions there is less danger of tuberculosis infection being spread in the hospital. The danger arises within the hospital, not from accepting tuberculous patients, but from hospitalizing them with their tuberculosis unrecognized. This has been, and still is, the practice in many hospitals. When patients are known to be tuberculous, most of the acute danger of contagion can be avoided. Admission X-rays usually tell us who these patients are so that adequate isolation can be provided.

Hospital admission X-rays are a public benefit. By this means, the disease can be discovered in a population group which cannot otherwise be screened by general or industrial X-ray surveys—the mother, the housewife, the maid, the self-employed and, as pointed out before, the aged. Of the fifteen million persons entering general hospitals in 1946, two million were obstetrical patients. Women of child-bearing age have a high tuberculosis mortality and often are not included in mass X-ray examinations.

Early and accurate diagnosis of chest conditions is always an aid to the physician. Even if disease is not discovered, it guards against the dangers of incomplete diagnosis.

The program of hospital admission X-rays is approved by the American College of Radiology as a screening device; in no way does it supplant regular X-ray examinations. Chest X-rays give impetus to accurate diagnosis by the staff, interns, and house staffs and complete the hospital records of the patients admitted. The X-ray makes a graphic addition to the record; in subsequent illness it may be consulted by the family physician if he suspects aggravation of a previously existing lesion.

What We Expect from X-ray Programs in General Hospitals, F. M. Meixner, M.D., National Tuberculosis Association Transactions, 1947.

CORRESPONDENCE

October 21, 1948

To the Editor:

Enclosed is a copy of a report which was approved by the Forsyth County Medical Society at a recent meeting. I would appreciate your publishing it in the NORTH CAROLINA MEDICAL JOURNAL.

You will perceive that the committee had in mind the following ideas:

1. To keep to a minimum the number of physicians who will be required to serve in the armed forces.

2. To avoid the necessity for congressional action to get physicians into the armed forces.

3. To maintain some civilian professional control, even though indirect, over the number of physicians taken into the armed forces.

4. To provide a definite and limited term of service for medical officers.

5. To set up a point system which would require service from physicians in the following order:

- a. Those trained at government expense
- b. Those not trained at government expense who have not served before
- c. Those who have served before—first those with short terms of service, and last, those with longer terms.

Our society hopes to secure action on this report through the American Medical Association.

Sincerely yours,
L. C. OGBURN, M.D.

* * * *

FORSYTH COUNTY MEDICAL SOCIETY MILITARY AFFAIRS COMMITTEE

Winston-Salem, N. C.
October 12, 1948

Proposed Plan for the Selection of Medical Officers for the Armed Forces

We recognize that good medical care is essential for an efficient military organization. Since we are not at war and since the armed forces are being expanded with selected men working under controllable conditions, the need for medical officers should be far less than in time of war. Every effort should be made to provide a professional work load for medical officers which would approximate that to which physicians are accustomed in civilian life. During the last war morale often suffered because of the long periods of comparative professional idleness, the uncertainties of length of service, assignment to veterans hospitals, and the use of professional personnel for administrative duties; these disturbing factors should be reduced to a minimum in the future.

The consolidation of the armed forces into a Department of National Defense is a forward step which could be made immediately applicable to the various medical corps. The consolidation of the medical services and facilities in adjacent Army, Navy, and Air Force bases, using personnel from all interchangeably and closing duplicating facilities, would liberate for other duties many physicians already in service.

Other steps of a similar nature should be taken wherever possible to utilize physicians in service at maximum professional efficiency.

We strongly oppose the use of medical officers of the armed forces to care for civilians within the United States, except in disaster. In view of the fact that the next war may very likely entail large numbers of casualties in the civilian population, provisions should be made for their care by civilian physicians, with the aid of rapidly transportable disaster units.

We recommend that the American Medical Association, through its Council on National Emergency Medical Service, take the following steps:

1. Determine that all possible procedures for the efficient use of medical personnel in the armed forces have been carried out.

2. Obtain assurance from the proper responsible officials of the armed forces that any physicians now in civilian life who may apply for a commission and/or active duty will be allowed to return to civilian life upon the completion of two years' service.

3. Through the state and county medical societies, provide for an equitable system of selecting physicians for service in the armed forces, using a point system such as the following:

SUGGESTED POINT SYSTEM:

A system similar to the one which determined release from active duty in 1945-46 should be used. Men with the lowest number of points should be the first to apply for a commission and/or active duty for two years. Points should be allowed for each year of age (5), dependent wife (50), each minor dependent (50), each month of military duty (10), and each month of foreign military duty (5). Points should be subtracted for each month of education or training of college quality at government expense during active duty (20) and subsequent to active duty (5).

EXEMPTIONS:

1. All who are physically disqualified by military standards.
2. Physicians needed in rural communities which would be left without adequate medical care.
3. All whose nearest birthday is 45 or over.
4. Heads of departments of medical schools.
5. Interns until the completion of their regular internship.
6. Residents until the completion of the year of residency which they were serving when they became eligible for military service.

SUGGESTED PROCEDURE:

1. The attached form ("Questionnaire for Physicians (M.D.)") would be reproduced locally.
2. One copy would be completed by each physician under 45 years of age in civil life in the United States and filed with his own or nearest county medical society. It would be the responsibility of each county medical society to secure a complete questionnaire from each physician in its area. It would be the responsibility of each physician to keep his questionnaire current.
3. Each county medical society would compile a

tally sheet listing the net-point numbers given on its questionnaires and indicating the number of non-exempt physicians with each listed net-point number. This list would be kept current and a copy sent to the state medical society headquarters on request.

4. Each state medical society would compile a complete list, keep it current, and forward a copy to the American Medical Association on request.

5. The American Medical Association would determine the number of eligible physicians in each net-point category, and the net-point number below which all non-exempt physicians would be requested

to apply for commissions and/or active duty for two years in order to furnish the necessary number for the armed forces.

J. P. Davis, M.D.
G. T. Harrell, Jr., M.D.
R. E. Hedrick, M.D.
Felda Hightower, M.D.
H. C. McDowell, M.D.
C. R. Welfare, M.D.
L. C. Ogburn, M.D.,
Chairman

Questionnaire for Physicians (M.D.)

1. Name:
last first middle
2. Address: Phone:
street office
city and state home
3. Graduate
medical school year
4. Interned from to
hospital
5. Licensed Specialty
state year (If not full time, write "None")

Points to be Allowed:

6. Age in years to nearest birthday $\times 5$
(If 45 or more, do not finish questionnaire)
7. Married and living with wife? If "Yes"
place figure "50" in right-hand column
8. Number of minor dependents $\times 50$
9. Number of months of active military duty $\times 10$
(As Enlisted Man, ASTP, V-12, Officer. Sixteen or more odd days count as a whole month)
10. Number of months of foreign military duty $\times 5$
11. Sum of lines 6, 7, 8, 9, and 10

Points to be Deducted:

12. Number of months in school or training of $\times 20$
college quality or better while on active duty
13. Number of months of school or training at $\times 5$
government expense since release from active duty
14. Sum of points entered under items 12 and 13
15. Subtract line 14 from line 11 NET POINTS

Do you know of any reason why you would not be acceptable as a medical officer in one of the armed forces?

Do you know of any reason why you should not apply for a commission and two years of active duty as a medical officer in the armed forces if, in view of the information above and in the opinion of the Council on National Emergency Medical Service, it should seem just and proper that you do so?

I declare that the information given above is correct.

Date Signature

BULLETIN BOARD

McCain Memorial Committee

At a recent meeting of the McCain Memorial Committee it was decided to have the unveiling and dedication of the portrait of Dr. Paul McCain at the State Sanatorium on December 7 at 2 p.m. The entire membership of the State Medical Society is invited to attend. The McCain Memorial Committee is composed of Dr. Paul F. Whitaker of Kinston, chairman; Dr. Frederic C. Hubbard of North Wilkesboro; and Dr. William M. Coppridge of Durham.

STATE BOARD OF MEDICAL EXAMINERS

The North Carolina Board of Medical Examiners will meet at the Sir Walter Hotel, Raleigh, on Monday, January 17, 1949, at 10 a.m., for the purpose of interviewing candidates for licensure by endorsement.

Dr. T. Leslie Lee of Kinston has been elected president for the next year, succeeding Dr. M. A. Pittman of Wilson.

NORTH CAROLINA SURGICAL ASSOCIATION

A new organization, the North Carolina Surgical Association, has recently been formed to further surgery in North Carolina. Officers of the Association are Dr. James F. Marshall, Winston-Salem, president; Dr. George T. Wood, High Point, vice president; and Dr. Alexander Webb, Jr., Raleigh, secretary-treasurer.

COLLEGE OF AMERICAN PATHOLOGISTS

The Southeastern Region of the College of American Pathologists will meet in Charlotte on December 10 and 11. The program is as follows:

Friday, December 10

- 9:30 a.m. Slide seminar, led by Dr. Tracy Mallory, pathologist, Massachusetts General Hospital.
- 1:30 p.m. "Splenic Anemias"—Dr. Robert Heinle, associate professor of medicine, Western Reserve University School of Medicine, Cleveland, Ohio.
- 2:45 p.m. "Cytological Cancer Diagnosis by Smear Method"—Dr. N. Chandler Foot, professor emeritus of surgical pathology, Cornell University; with scheduled discussion by J. A. Cunningham, M.D., and L. C. Posey, M.D., Birmingham, Alabama, and E. R. Pund, M.D., University of Georgia School of Medicine, Augusta, Georgia.
- 7:00 p.m. Banquet. Dinner speaker, Dr. M. G. Westmoreland, Executive Secretary, College of American Pathologists. Informal discussion after dinner on "Bone Marrow Studies," led by Dr. Heinle.

Saturday, December 11

- 9:30 a.m. "Lower Nephron Nephrosis"—Dr. Tracy Mallory.
- 10:30 a.m. Series of papers presented by members of the College.
- 1:30 p.m. Tour through the hospital laboratories.

The scientific meetings will be held in the Charlotte Memorial Hospital. Pathologists, regardless of membership in the College of American Pathologists, are invited.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

The thirty-seventh annual session of the North Carolina Public Health Association was held October 18-20 in Durham. Among those participating in the program were Drs. J. H. Epperson and Robert A. Ross of Durham, Drs. Edward G. McGavran and O. David Garvin of Chapel Hill, Drs. H. C. Whims and E. D. Peasley of Asheville, Dr. E. H. Ellinwood of Newton, Drs. James F. Robertson and Donald B. Koonce of Wilmington, Dr. C. W. Bailey of Rocky Mount, Drs. J. W. R. Norton and Ivan Procter of Raleigh, Dr. Roscoe D. McMillan of Red Springs, Dr. E. S. Grady of Smithfield, Dr. C. F. McRae of Burnsville, Dr. R. M. Buie of Greensboro, Dr. J. Roy Hege of Concord, Dr. M. B. H. Michal of Waynesville, Drs. James F. Marshall and Wingate M. Johnson of Winston-Salem, and Dr. Fred Hubbard of North Wilkesboro.

Officers of the Association for 1947-48 were Dr. H. W. Stevens of Wilson, president; Dr. E. A. Branch of Raleigh, vice president, and Harold Parker of Winston-Salem, secretary-treasurer.

SEMINAR ON INDUSTRIAL MEDICINE AND SURGERY

A seminar on industrial medicine and surgery was held at the Hotel Sir Walter in Raleigh, November 9 and 10. This was the fourteenth in a series of industrial medical seminars sponsored by the American Mutual Liability Insurance Co., for the purpose of disseminating information on advanced practices in the care and treatment of occupational diseases and injuries.

Among those taking part in the program were Drs. Barnes Woodhall, R. Beverly Raney, and Lenox D. Baker of Durham; Dr. Hugh A. Thompson of Raleigh; Dr. Malory A. Pittman of Wilson; and Dr. William M. Roberts of Gastonia.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

At a recent meeting of the Executive Committee of the N. C. Tuberculosis Association, it was announced that the North Carolina Trudeau Society has been approved by the American Trudeau Society and that a constitution has been adopted. All members of the American Trudeau Society residing in North Carolina are invited to join.

* * * *

Dr. C. Sylvester Green, editor of the *Durham Morning Herald*, has been appointed state director of the forty-second annual Seal Sale.

* * * *

Representatives from North Carolina at the Southern Tuberculosis Conference, held in Savannah, Georgia, September 29-October 1, included Dr. M. D. Bonner of Jamestown, Dr. P. A. Yoder of Winston-Salem, Dr. H. L. Seay of Huntersville, Dr. D. T. Smith of Durham, Dr. H. F. Eason of Wilson, Dr. H. S. Willis of McCain, Dr. C. D. Thomas of Black Mountain, Dr. R. B. C. Franklin of Mt. Airy, Dr. C. G. Milham of Hamlet, and Dr. Anderson of Asheville.

Mr. Frank W. Webster of Raleigh, executive secretary of the N. C. Tuberculosis Association, was elected secretary-treasurer of the conference, and Dr. H. S. Willis of McCain was named to the board of directors.

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

Dr. Lenox D. Baker, professor of orthopaedic surgery, has recently returned from a seven-week trip to Far East medical installations as orthopaedic consultant for the Surgeon General's Office of the Department of the Army. His mission was "to promote and improve the quality of medical care and instruction in medical installations in the Far East command."

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Ray E. Brown, superintendent of the University of Chicago Clinics, Chicago, Illinois, and former administrator of the North Carolina Baptist Hospital, spoke to the Bowman Gray Medical Society at its meeting on October 25. His subject was "Economics of Medical Care."

* * * *

Dr. Frank R. Lock, head of the department of obstetrics and gynecology, was one of the speakers at sessions of the Oklahoma Postgraduate Conference in Oklahoma City, October 24-28.

* * * *

Dr. Fred K. Garvey, director of the department of urology, was elected president of the North Carolina Urological Association during the annual meeting of the association, held at Southern Pines, October 17-18. Dr. Charles M. Norfleet, instructor in urology, was one of the speakers at the meeting.

* * * *

Dr. J. Maxwell Little, associate professor of physiology and pharmacology, took part in round-table discussions on the subject of poliomyelitis research at a conference in Madison, Wisconsin, October 25-27.

The conference was sponsored jointly by the department of medical microbiology of the University of Wisconsin and the National Foundation for Infantile Paralysis. Dr. Little reported on progress being made here in the research project attempting to grow the virus of polio in embryonated eggs.

* * * *

Dr. Wingate M. Johnson, professor of clinical medicine, spoke to the section on general practice of the Indiana State Medical Association and to the Indiana Academy of General Practice in Indianapolis on October 27.

* * * *

An exhibit by Dr. David Cayer on "Vitamin Requirements in Health and Disease" won honorable mention at the meeting of the Southern Medical Association.

EIGHTH DISTRICT MEDICAL SOCIETY

The Eighth District Medical Society met in High Point on October 27. Speakers on the afternoon program were Dr. C. C. Carpenter of Winston-Salem, Drs. Max P. Rogers and E. D. Jones of High Point, and Dr. James E. Best of Greensboro. The papers were discussed by Drs. James F. Donnelly, Francis Forsyth, and J. P. Rousseau of Winston-Salem, and by Dr. Maurice LeBauer of Greensboro. Senator George Penny of Greensboro spoke at the evening meeting.

Officers of the Society are Dr. K. B. Geddie, president; Dr. A. R. Cross, secretary-treasurer; and Dr. C. L. Gray, vice president.

TENTH DISTRICT MEDICAL SOCIETY

The fall meeting of the Tenth District Medical Society was held in Murphy on October 13. At the afternoon session scientific papers were presented by Dr. W. A. Hoover of Murphy and Drs. Stanley S. Atkins, Richard C. Nailling, and Lillie C. Walker of Asheville, and discussed by Drs. Julian A. Moore, James Cherry, E. D. Peasley, and Bernard H. Hartman. Dr. V. H. Duckett of Canton gave the president's address, and the councilor of the district, Dr. D. M. McIntosh of Old Fort, gave a report. Dr. Hugh A. Matthews of Canton responded to the address of welcome.

Dr. David F. James, assistant professor of medicine at Emory University, was guest speaker at the dinner meeting. His subject was "The Differential Diagnosis of Medical and Surgical Jaundice."

Officers elected for the coming year were Dr. W. A. Hoover of Murphy, president; Dr. Julius Sader of Brevard, vice president; Dr. Otis Duck of Mars Hill, second vice president; and Dr. Paul McBee of Marion, third vice president. Dr. Joseph T. Sullivan of Asheville was re-elected secretary-treasurer. Retiring officers were Dr. V. H. Duckett of Canton, Dr. Joseph Osborne of Rosman, Dr. W. N. Fortescue of Hendersonville, Dr. Candler A. Willis of Candler, and Dr. B. W. Whitfield of Murphy.

CARTERET COUNTY MEDICAL SOCIETY

The regular monthly supper meeting of the Carteret County Medical Society was held in the Morehead City Hospital, October 11, the hospital acting as host.

The scientific program consisted of a lecture on bronchoscopy by Dr. J. C. Peele of Kinston.

Other guests at the meeting were Dr. P. T. Myers, roentgenologist, Dr. Dan Boyette, pediatrician, and Dr. Dalton, ophthalmologist, all of Kinston. Dr. J. W. Morris is president of the society, and Dr. F. E. Hyde secretary.

Reported by

N. Thomas Ennett, M.D.

Carteret County Health Officer

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Dr. Richard B. Jackson of Raleigh discussed "Some of the Common Surgical Aspects of Proctology" before the Edgecombe-Nash Counties Medical Society at its meeting in Rocky Mount on October 13. Drs. Glenn Phipps and Wardell Mills of Rocky Mount, associates of Dr. C. W. Bailey, were elected to membership in the society.

FORSYTH COUNTY MEDICAL SOCIETY

A dinner meeting of the Forsyth County Medical Society was held on October 12 in Winston-Salem. Dr. Arthur Merrill spoke on "Heart Failure and the Use of Diuretics."

HALIFAX COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Halifax County Medical Society was held in Roanoke Rapids on October 8. The speaker was Dr. Everett I. Bugg, Jr., of Durham, whose subject was "Orthopedics."

NEWS NOTES

Dr. Aldert S. Root of Raleigh has been appointed by Governor Cherry to succeed the late Dr. Frank Sharpe of Greensboro as a member of the North Carolina Milk Commission.

* * * *

Dr. William B. Alsop has opened an office in Winston-Salem for the practice of otolaryngology.

* * * *

Dr. E. Reid Bahnson has announced the opening of offices on November 1 for the practice of internal medicine in Winston-Salem.

* * * *

Dr. Ruth O'Neal has announced the opening of her office in Winston-Salem. Her practice will be limited to pediatrics.

* * * *

Dr. Henry L. Valk has recently announced the opening of offices for the practice of internal medicine in Winston-Salem.

* * * *

Among the participants in the Miami meeting of the Southern Medical Association were the following physicians from North Carolina: Dr. David Cayer of Winston-Salem, who presented a scientific exhibit and a paper before the Section on Gastroenterology; Dr. Fred Garvey of Winston-Salem, who presented three motion pictures on urologic surgery; Drs. Keith Grimson, Sam McPherson, William M. Nicholson, Walter Spaeth, Arthur H. London, Jr., George J. Race, Bernard Black-Schaffer, George Baylin, Robert J. Reeves, Barnes Woodhall, and Joseph E. Markee of Durham, Drs. George T. Harrell, Manson Meads and W. Eugene Cornatzer of Winston-Salem, Drs. Walter R. Johnson and George D. Wilson of Asheville, Dr. Daniel Boyette of Kinston, Dr. Robert E. Fox of Albemarle, and Dr. J. W. R. Norton of Raleigh, all of whom presented papers before the various section meetings; and Drs. Julian Ruffin, J. L. Callaway, Robert N. Creadick and Bayard Carter of Durham, Drs. Paul Kimmelstiel and Oren Moore of Charlotte, and Dr. Hampton Mauzy of Winston-Salem, all of whom discussed papers.

North Carolina doctors who served as officers of sections were Drs. William M. Nicholson, Cyrus C. Erickson, and Walter L. Thomas of Durham, Drs. Walter R. Johnson and George D. Wilson of Asheville, Dr. Samuel F. Ravenel of Greensboro, Dr. Joseph M. Hitch of Raleigh, Dr. W. M. Roberts of Gastonia, Dr. Williamson Z. Bradford of Charlotte, and Dr. Robert E. Fox of Albemarle.

Dr. Arthur H. London, Jr., of Durham, was chairman of the Committee on Scientific Awards of the Southern Medical Association.

* * * *

The following North Carolina physicians registered at the Southern Medical Association meeting, held in Miami, October 25-27:

H. H. Baird, Charlotte
T. W. Baker, Charlotte
W. E. Baldwin, Jr., Whiteville
S. W. Barefoot, Greensboro
G. J. Baylin, Durham
J. R. Bender, Winston-Salem
B. Black-Schaffer, Durham
F. C. Bore, Durham
W. Z. Bradford, Charlotte
D. T. Bridges, Lattimore
H. L. Brockmann, High Point
E. B. Brooks, Winston-Salem

J. L. Callaway, Durham
David Cayer, Winston-Salem
J. W. Clower, Jr., Durham
J. J. Combs, Raleigh
R. N. Creadick, Durham
C. S. Drummond, Winston-Salem
J. C. Elliott, Oxford
C. C. Erickson, Durham
R. E. Fox, Albemarle
E. W. Franklin, Jr., Charlotte
W. L. Grantham, Asheville
K. S. Grimson, Durham
G. T. Harrell, Winston-Salem
J. P. Hendrix, Durham
E. R. Hipp, Charlotte
J. M. Hitch, Raleigh
F. M. Houser, Cherryville
S. S. Hutchinson, Bladenboro
J. E. Jacobs, Charlotte
W. R. Johnson, Asheville
Grace P. Kerby, Durham
Herbert Kerman, Durham
H. B. Kernodle, Burlington
W. L. Kirby, Winston-Salem
A. H. London, Durham
W. M. Long, Mocksville
C. C. Massey, Charlotte
C. H. Mauzy, Winston-Salem
S. D. McPherson, Jr., Durham
C. G. Milham, Hamlet
J. W. Morris, Morehead City
K. E. Neese, Monroe
W. W. Noel, Henderson
J. W. R. Norton, Raleigh
A. L. O'Briant, Raeford
E. S. Orgain, Durham
D. R. Perry, Durham
E. N. Phillips, North Wilkesboro
P. H. Ringer, Asheville
W. E. Selby, Charlotte
W. L. Thomas, Durham
R. M. Troxler, Burlington
Lillie C. Walker, Asheville

CORRECTIONS FOR THE DIRECTORY

The following corrections should be made in the alphabetical list of fellows of the Medical Society and in the roster by counties:

Dr. William R. Brandon of Statesville—Specialty should be ALR rather than OALR.

Dr. William Davis, Jr., of Elizabeth City—Specialty should be Pd rather than GP.

Dr. John C. Grier has moved from West End to Pinehurst. His specialty should be GP rather than P.

Dr. W. M. Long of Mocksville—Specialty should be GP rather than S.

Dr. Roy M. Peacock of Asheville—Specialty should be GP & S rather than GP.

Dr. J. C. Peele of Kinston—Specialty not listed; should be ALR. Year of graduation should be 1937 rather than 1936.

Dr. George H. Wadsworth has moved from Elizabeth City to Ahoskie. His specialty should be S rather than GP.

Dr. L. L. Wilkinson of High Point—Specialty should be S rather than GP.

(BULLETIN BOARD CONTINUED ON PAGE 598)



A POOR POINT OF VIEW!

. . . With so much going on in the world it's a shame to emulate the traditional position of the ostrich . . .

. . . Busy physicians, with heavy working schedules, often are tempted to "get away from it all" by laying aside their professional journals and relaxing with the latest "who dunit" murder mystery . . .

. . . Relaxation is fine, but too much is happening in the world of medical science and medical economics to remain out of professional circulation for more than a short time . . .

. . . The Journal gives you the latest information on scientific matters, news of the profession, and also what is new in drugs, medical appliances, and special services. Don't overlook the educational value of the ads. You can trust their reliability, for only products accepted by A. M. A. councils are advertised . . . Most offer samples.* Write for them and in that way help us prove the point we often make, that . . . "North Carolina physicians read their state medical journal."

THE NORTH CAROLINA MEDICAL JOURNAL

* See Page XXXIX for Current Advertisers.

AUXILIARY

REPORT OF BOARD MEETING

The annual meeting of the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina was held at McCain on Tuesday, October 5, at 11 a.m. The members were guests of Dr. and Mrs. H. S. Willis. The president, Mrs. Raymond Thompson of Charlotte, presided over the meeting. Forty members were present.

After the invocation, given by Mrs. Charles L. Nance, the president brought greetings to the Board. Mrs. H. S. Willis extended a cordial welcome to the members. Brief reports, plans, and suggestions were heard from the president-elect, Mrs. Thomas L. Lee, and from the treasurer, Mrs. E. C. Judd. It was announced that the national dues are \$1.00 and the state dues \$1.00. Fifty cents of the state dues goes to expenses and fifty cents to the Sanatoria fund. Mrs. P. P. McCain, chairman of past presidents, and Mrs. David Cayer, recording secretary, were unable to be present.

The first vice president, Mrs. Reece Berryhill, chairman of organization, introduced the district councilors, and short reports were given by each.

First District—Mrs. J. E. Smith, Windsor

Second District—Mrs. Ben F. Royal,
Morehead City

Third District—Mrs. E. C. Anderson,
Wilmington

Fourth District—Mrs. J. W. Rose,
Pikeville

Fifth District—Mrs. H. S. Willis, McCain

Sixth District—Mrs. W. C. Ward, Raleigh

Seventh District—Mrs. Charles L. Nance,
Charlotte

Eighth District—Mrs. C. V. Tyner,
Leaksville

Ninth District—Mrs. J. S. Holbrook,
Statesville

Tenth District—Mrs. Charles D. Thomas,
Black Mountain

Mrs. M. D. Hill, second vice-president and chairman of Sanatoria beds, gave her report and introduced her chairmen:

McCain Bed Chairman—Mrs. John H.
Hamilton, Raleigh

Stevens Bed Chairman—Mrs. G. M. Billings, Morganton

Cooper Bed Chairman—Mrs. M. I.
Fleming, Rocky Mount

Dr. Rachel Davis, chairman of the Advisory Board, gave her report.

After lunch Dr. Roscoe McMillan, secretary-treasurer of the Medical Society, was introduced. Dr. McMillan spoke of some of the problems of the medical profession. He announced that plans are being made to celebrate the one hundredth anniversary of the Medical Society of the State of North Carolina in May, 1949, at Pinehurst, and urged a large attendance.

Dr. J. F. Robertson, president of the Medical Society, brought greetings to the Board.

Committee reports and plans were given briefly by the following chairmen:

Program Chairman—Mrs. Harry Johnson,
Elkin

Public Relations Chairman—Mrs. Milton
Clark, Goldsboro

Research Chairman—Mrs. Roland S. Clinton, Gastonia

Press and Publicity Chairman—Mrs. John
P. Kennedy, Charlotte

Hygeia Chairman—Mrs. C. S. Barker,
New Bern

Bulletin Chairman—Mrs. Walter Summer-
ville, Charlotte

Scrapbook Chairman—Mrs. Stuart Gibbs,
Rocky Mount

Memorial Chairman—Mrs. H. H. Foster,
Norlina

Nominations Chairman—Mrs. Ben Ken-
dall, Shelby

Revisions Chairman—Mrs. Robert T. Pig-
ford, Wilmington

Legislative Chairman—Mrs. C. P. Eld-
ridge, Raleigh

Historian—Mrs. Roscoe McMillan, Red
Springs

MRS. JOHN P. KENNEDY, Charlotte
Chairman Press and Publicity

Sick Children

Sick children present a two-fold problem in respect to growth and maintenance of body tissue: (1) repair of the damage wrought by disease, and (2) provision of the nitrogen needed for the growth processes, which persist in their demands during periods of illness. Hence, the physician may wish to prescribe large amounts of protein. Protenum is a highly palatable high protein food—low in fat. In the form of a beverage or in various recipes, Protenum will increase the protein intake without adding appreciable bulk to the diet. For literature and professional samples of Protenum, write Mead Johnson & Co., Evansville 21, Indiana.

BOOK REVIEWS

Headache and Other Head Pain. By Harold Wolff. 642 pages. Price, \$12.00. New York and London: Oxford University Press, 1948.

This excellent and comprehensive book is based upon a thorough review of the literature, integrated with the extensive work of the author and his collaborators performed over the past fifteen years. It provides both a critical analysis of the present knowledge of headache mechanisms and practical points in the diagnosis and treatment of head pains.

Represented are chapters on headache associated with intracranial pressure, brain tumor, subarachnoid hemorrhage, fatigue, the nose and paranasal sinuses, the eyes, the muscles of the back of the neck, and a detailed discussion of the migraine syndrome. Each chapter discusses its topic in great detail, giving references to the current literature, and closes with a summary for those desiring to digest the material quickly. In the last chapter, a complete summary of the entire book is given. Extensive use is made of material in diagrammatic form, 154 figures being used.

The book is highly recommended, both for the individual occasionally interested in headache and for those to whom headache problems are a daily occurrence. It is an excellent source book for the internist, the neurologist and neurosurgeon, the general practitioner, the instructor, and the medical student.

Occupational Marks and Other Physical Signs; A Guide to Personal Identification. By Francesco Ronchese, M.D., Instructor in Dermatology, Boston University School of Medicine, and Dermatologist in Chief, Rhode Island Hospital, Providence. 181 pages. Price, \$5.50. New York: Grune and Stratton, 1948.

This unusual monograph undertakes to list and describe the various specific occupational marks, such as calluses, scars, pigmentation, and tattoos. An impressively long list of occupations that may produce characteristic identifying marks is described, although the author points out that the absence of such marks is of no diagnostic value because of the increasing use of protective devices against trauma and the continuing introduction of labor-saving machinery. The writer's description of these marks, how they are acquired, and the possible usages to which such information may be put is an unusual and interesting story. The photographs of the lesions, usually accompanied by a diagram of their method of acquisition, are excellent and occupy 107 pages. The work is well documented, twelve pages of references being given, and the index is adequate. This book should prove to be of interest to criminologists as well as physicians.

A Manual of Pharmacology—And Its Application to Therapeutics and Toxicology. By Torald Sollmann, M.D., Professor Emeritus of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Ed. 7. 1132 pages. Price, \$11.50. Philadelphia and London: W. B. Saunders Company, 1948.

This book, which had its origin in 1917, has remained a standard reference book on pharmacology since its initial publication. Remarkable in its completeness of coverage, it has been kept strictly up-

to-date and contains extensive discussions of such topics as the sulfonamides, para-amino benzoic acid, the histamine antagonists, the antithyroid drugs, and digitoxin.

To the already voluminous references present in previous editions, many recent publications have been added. The organization continues to be by drug groups rather than by systemic action. The use of a double column format has improved the ease of reading. The use of large type for the more important passages is continued in this edition.

The book is highly recommended as a reference text for the internist, the general practitioner, and the medical student.

Textbook of Gynecology. By Emil Novak, M.D., F.A.C.S., Assistant Professor of Gynecology, The Johns Hopkins Medical School; Gynecologist, Bon Secours and St. Agnes Hospitals, Baltimore. Ed. 3. 742 pages, with 484 illustrations. Price, \$8.00. Baltimore: Williams & Wilkins Co., 1948.

The third edition of Dr. Novak's text is a comprehensive review of the field of gynecology. This book has rapidly been accepted as the leading textbook of gynecology. The first two editions were excellent, and there are several features of the third edition which make it an even finer text. Especially commendable is the considerable number of illustrations in full color plates. Most of the important gynecologic lesions are included in this series of pictures. A great many black and white figures and diagrams are also included. The subjects which were photographed are well chosen to illustrate clearly the descriptive material of the text.

Dr. Novak is one of the leading medical authors of our generation. He writes clearly and concisely, and his recommendations for the treatment of each lesion are specific enough to make his text a ready reference book for the office practice of gynecology. Excellent special sections on subjects such as leukorrhea, backache in women, and problems of sex life are particularly useful.

It is the opinion of the reviewer that this is the best textbook of gynecology available for the student and general practitioner. It is recommended without reservation.

Biology of Disease. By Eli Moschowitz, M.D., Physician, Mt. Sinai Hospital, New York; formerly Assistant Professor, Clinical Medicine, Columbia University. 221 pages. Price, \$4.50. New York: Grune and Stratton, 1948.

In this book the author has presented his ideas as to the evolution of hypertension of the pulmonary circuit, hypertension of the greater circulation, arteriosclerosis, periarteritis nodosa, Libman-Sacks disease, polycythemia vera, leukemia, follicular lymphoblastoma, myeloma, Graves' disease, neuro-circulatory asthenia, toxic hepatitis, Laennec or portal cirrhosis, glomerulonephritis, obesity, peptic ulcer, achlorhydria in relation to anemia, cardio-spasm, sprue syndrome, emphysema, psychosomatic problems, uremia, nephrosis and the hyperkinetic diseases.

The pathologic effects of these disease processes are only partly discussed. In this short resume there is very little experimental evidence for the etiology of these disease processes.

Case Studies in the Psychopathology of Crime. Vol. 3 and Vol. 4. By Ben Karpman, M.D., Senior Medical Officer and Psychotherapist, St. Elizabeth's Hospital, Washington, D. C. Vol. 3: 834 pages. Vol. 4: 875 pages. Washington, D. C.: Medical Science Press, 1948.

Previous volumes of this work have been reviewed in this journal (6:113 (Feb.) 1945 and 8:609 (Sept.) 1947), and the two present volumes continue the plan previously established. Each of the present volumes consists of four detailed and very intensive case studies, containing material ranging from autobiographical information written by the patient to detailed accounts of dreams. Although the approach is primarily analytic, the author makes very little attempt to interpret any of the voluminous information offered concerning each patient. Case history information that is as complete as possible is recorded, and the reader is left to draw his own conclusions and formulate his own theories concerning the psychiatric factors leading to the patient's crimes.

These volumes could be a very valuable source of material for persons interested in research in this field. Each volume is a self-contained unit, with full preface and index, and with no cross-references from volume to volume. This work will be useful only to those having a "direct professional interest in medico-legal and social problems," and a notation inside the cover states that sale is restricted to persons in this category.

Pioneer Life in Kentucky. By Daniel Drake, M.D. Edited, from the original manuscript, with introductory comments and a biographical sketch by Emmet Field Horine, M.D. Price, \$4.00. 257 pages. New York: Henry Schuman, 1948.

Pioneer Life in Kentucky "consists of a series of 'reminiscential' letters written by Dr. Daniel Drake in response to the urgent requests of his children for a family record . . . This book, although written by the most eminent early nineteenth century physician of the Central West, is not a medical treatise. It is an intimate and detailed portrayal of farm and family life in a fascinating and significant period of the United States."

In a biographical sketch by Dr. Emmet Field Horine, Dr. Drake is pictured as being a physician, man of letters, naturalist, philosopher, and teacher. He was the first student of medicine in Cincinnati and later acquired a large practice there. Instrumental in establishing the Cincinnati College, he later founded the Medical College of Ohio and served on the faculty there and at other prominent medical schools. As author and editor, he made many contributions to medical literature and to the field of natural history.

These letters were published first in 1870 and reprinted in 1907; however, in the present edition, the editor has turned to the original manuscripts for the sake of accuracy.

Pioneer Life in Kentucky has been recommended for boys and girls of the high school age, but it is also worthy of a place in any medical school library.

In Memoriam

MONTGOMERY H. BIGGS, M.D.

Dr. Montgomery Herman Biggs, for forty-two years a member of the staff of the Rutherford Hospital, died on August 28, after an illness of several weeks. In his death the staff and trustees of the hospital lost a distinguished associate and a valued friend.

Born in Hinsdale, Illinois, on May 14, 1870, Dr. Biggs graduated in medicine from the University of Pennsylvania in 1897. He served an internship at the University Hospital and then was appointed resident physician at the Philadelphia General Hospital. In 1906, after gaining experience and attaining high qualifications as a surgeon, Dr. Biggs came to Rutherford and was associated with Dr. Henry Norris in founding the Rutherford Hospital, with which he was connected for the remainder of his life. So thorough was the work of Dr. Biggs as a physician, surgeon, hospital administrator, and educator that his influence reached into homes in every section of the county. Being a man of the highest probity, whose life was devoted unsparingly to the service of his fellow man, he was a source of inspiration to his medical colleagues and his passing leaves them with a sense of deep bereavement.

During the last few years of his life, in spite of ill health, Dr. Biggs gave his time and energy to planning for an enlargement of the hospital and its facilities.

At a meeting held on October 7, the trustees of the Rutherford Hospital, as an expression of appreciation of Dr. Biggs's services, incorporated in the records the following resolution:

"Resolved, that the Board of Trustees record its deep sorrow at the loss of Dr. Montgomery H. Biggs, colleague and friend. Through his work and by his spirit and personality he endeared himself to all his co-workers, who had come to feel for him equally admiration, respect, and love. It can well be said of Dr. Biggs that he brought relief from suffering and the restoration of health to large numbers of our people and was influential in making our county a better place in which to live."



BULLETIN BOARD

(CONTINUED FROM PAGE 593)

DIABETES DETECTION DRIVE

The finding of the million unknown diabetics in this country poses a direct challenge to the American doctor. It is within his power to accomplish this feat. The existence of a million undiscovered diabetic patients in the United States has been demonstrated through a series of surveys, the most recent one conducted by the United States Public Health Service. The results of these studies now provide a springboard for organized medicine and a golden opportunity for physicians to seize the initiative on their own in this significant phase of public health.

The American Diabetes Association has planned a campaign to promote the early discovery and prompt treatment of the million undiscovered cases of diabetes. This campaign is unique in professional service, for according to plan the physician himself will be at the helm. Therefore, the plan cannot be prosecuted, or even started, without the endorsement and support of the entire medical profession through its governing bodies, national, state, county and local medical societies.

The plan proposed by the Association is simple, direct, and sure. Through local diabetes associations, related to the American Diabetes Association and with cooperation of local, county and state medical societies over the United States and Canada, it is planned to carry out blood-sugar screening tests by a new five-minute micro-blood sugar method with simultaneous urinalysis for sugar with attention to the time in relation to the preceding meal. The procedure can be carried out apart from a formal laboratory. The equipment is still in the manufacturer's hands but is to be available within two or three months. The only provision will be that the candidate must name a physician or clinic to which the results of the tests will be mailed for interpretation to the patient. **Under no condition** will a report be sent directly to the examinee. The effort is to bring the unknown diabetic patient under his own physician's care. There will be no statistics; no red tape.

Simultaneously, the American Diabetes Association will carry on an intensive educational campaign directed first toward doctors' postgraduate courses. It will be directed toward the layman by radio, newspapers and other publicity channels in addition to the "A.D.A. Forecast," the Association's bi-monthly magazine which brings to the diabetic patient homespun articles on the disease by eminent authorities in the field. At the same time the Association will place in the hands of physicians over the country an authentic "Handbook of Therapy." Containing the most up-to-date information available, the Handbook will assist the physician in treating diabetic patients.

The week of December 6-12, immediately following the interim meeting of the American Medical Association, will be proclaimed as "Diabetes Week." This will be the formal beginning, the kick-off, of the Association's Diabetes Detection Drive. From this start, the program will continue on a long-term basis.

The 1947 death rate from tuberculosis in North Carolina was 28.4, and there were 1056 deaths from the disease during that year.

AMERICAN MEDICAL WRITERS' ASSOCIATION

At the fifth annual meeting of the Mississippi Valley Medical Editors' Association, held at Springfield, Illinois, September 29, radical changes were voted in the Association's constitution, including the adoption of a new organization name—"The American Medical Writers' Association." The new name more clearly expresses the purpose and scope of the organization. The purpose is defined as: "(a) to bring into one organization all physicians interested in medical journalism or medical writing, and all laymen who are connected with the editorial or business staff of medical periodicals, libraries, foundations, or publishing companies; (b) to help improve medical literature; (c) to secure interchange of views of the members so that they may attain such intelligent unity and harmony in every phase of their labor as will elevate and make effective the opinions of the medical profession in their respective communities."

The officers for 1949 are: President, E. F. Parker, M.D., Moline, Ill.; president-elect, K. H. Schnepf, M.D., Springfield, Ill.; vice-president, Julius Jensen, M.D., St. Louis; secretary-treasurer, Harold Swanberg, M.D., Quincy, Ill. All interested in medical writing are cordially invited to join. Membership application blanks may be secured from Harold Swanberg, M.D., Secretary, 209-224 W.C.U. Bldg., Quincy, Ill.

EXCERPTA MEDICA

A comprehensive international abstracting service published in English.

In April, 1947, after a year's intensive preparation, the first of the fifteen monthly sectional journals comprising *Excerpta Medica* made its appearance in the medical world. The final section was published in July, 1948, and all sections are now appearing regularly every month.

Excerpta Medica has now been officially recognized as the only international medical abstracting service at present in existence which covers all the clinical and experimental fields of medicine. The Williams & Wilkins Company is sole agent for *Excerpta Medica* in the United States, Canada, and Central America.

FEDERAL SECURITY AGENCY

Deaths in Each State, 1947

A total of 1,445,370 deaths was registered in the United States during 1947, according to figures released by the National Office of Vital Statistics, in the Public Health Service, Federal Security Agency. This represents an increase of 49,753 deaths over the number recorded in 1946.

The crude death rate for 1947 was 10.1 deaths per 1,000 estimated population. This is the second lowest rate ever recorded for the United States; the lowest was 10.0 in 1946.

* * * *

Children's Bureau

Forty spokesmen for the producers and consumers of health services for mothers and children met in Washington recently to form an advisory committee to the U. S. Children's Bureau on federal-state programs for maternal and child health and crippled children's services. The Children's Bureau is a unit in the Social Security Administration, Federal Security Agency. Among the members of the committee are Oscar L. Miller, M.D., orthopedic surgeon, Charlotte, North Carolina, and John Z. Preston, M.D., of Tryon, North Carolina.

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SYMPOSIUM ON HEADACHE

MECHANISMS OF PRODUCTION AND POINTS OF REFERRAL

HAROLD D. GREEN, M.D.*

WINSTON-SALEM

Headache is perhaps the most frequent of all complaints. It has been reported in as many as 8 per cent of a large unselected group of normal subjects. Most headaches are functional in the sense that they represent temporary alterations such as increased pulsation of the blood vessels or abnormally high muscle tone. A relatively small number of headaches are due to permanent structural abnormalities such as tumors or hemorrhages. Of the functional types, the majority are due to faulty emotional adjustment of the individual to his environment. This is particularly true of tension headache, migraine headache, and headache associated with hypertension. Such headaches usually originate outside the cranium.

In this paper headache will be discussed briefly, first in terms of the site and mechanism of origin, and second, in terms of the areas of pain referral. More detailed information may be obtained from the publications which furnished the source material for this article⁽¹⁾.

Read before the Section on Neurology and Psychiatry, Medical Society of the State of North Carolina, Pinehurst, May 1, 1948.

*Professor of Physiology and Pharmacology and Associate in the Department of Internal Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina.

1. (a) Moench, L. G.: Headache, Chicago, Year Book Publishers, 1947, p. 207; (b) Wolff, H. G.: Headache Mechanisms, McGill M. J. 15:127-169 (April) 1946; (c) Wolff, H. G. and others: Pain, Research Publication, Association for Research in Nervous and Mental Diseases, v. 23, Baltimore, Williams & Wilkins, 1943. (d) Horton, B. T. and Macy, D., Jr.: Treatment of Headache, M. Clin. North America 30:811-831 (July) 1946. (e) Keeney, E. L.: Periodic Vascular Head Pain; Discussion of Mechanism, Clinical Types and Roles of Vasoconstricting and Vasodilating Drugs (Especially Histamine) in Diagnosis, Clinics 5:550-567 (Aug.) 1946. (f) Wolff, H. G.: Headache and Other Head Pain, New York, Oxford University Press, 1948, p. 612.

Headache of Extracranial Origin

All extracranial structures contain pain endings, stimulation of which may cause pain referred to the stimulated point or to the area of distribution of the main nerve trunk supplying the stimulated area. The sensory nerve trunks supplying the head are the fifth, seventh, ninth, and eleventh cranial nerves and the upper three cervical nerves. The trigeminal (fifth) cranial nerve, which is distributed to the face, tongue, teeth, eyes, nose, meninges, and the masseter, temporal and pterygoid muscles, carries sensory impulses from approximately all of the area of the head superior and anterior to a diagonal line through the ear. The facial (seventh) nerve supplies sensory endings to the ear, the tendinous structures of the face, and the posterior portion of the orbit. Sensory impulses from the tympanum, pharynx, tonsils, tongue, and mastoid are conveyed by the glossopharyngeal (ninth) nerve, while those from the back of the head and upper cervical regions are transported by the accessory (eleventh) nerve and by the first three cervical nerves.

Pain originating in the teeth

Short periods of stimulation of a tooth cause pain referred to the tooth, but more prolonged stimulation may cause pain referred over the whole area of distribution of the branch of the fifth nerve supplying the stimulated tooth, or, on occasion, over the whole area of distribution of the fifth cranial nerve. Both the local and the referred pains are abolished by anesthetization of the stimulated tooth.

Pain originating in the ear and pharynx

The various structures of the ear are supplied by sensory roots from the fifth, seventh, ninth and tenth cranial nerves, while adjacent structures are innervated by the

upper cervical roots. Consequently, pain which is felt in the ear and immediately adjacent structures may arise directly in the ear as the result of otitis media, rupture of the drum or inflammation of the external canal; it may be referred to this region as a result of neuralgias of any of the above mentioned nerves; or it may be due to irritation at any point in their area of distribution—in the teeth, tonsils, larynx, or temporomandibular joint, in the posterior fossa of the cranium, or in the cervical spine.

Pain originating in the nose and sinuses

Pain associated with the nose and paranasal structures is rarely due to changes of pressure within the sinuses, but is usually due to swelling and edema of the mucous membranes in the region of the ostia of the sinuses, and of the adjacent turbinates. Evidence for this statement is the relief of such pain afforded by procainization of the swollen nasal mucous membranes. Headaches of this type may be aggravated by shaking the head, by lying down, or by any other factor which increases the engorgement of the mucous membranes.

Eye pain

Pain may arise in the eye as a result of glaucoma or movement of an inflamed iris. Hypermetropia and astigmatism may lead to aching due to excessive muscular strain, but such headache is rarely seen with myopia. In the latter condition, the increased effort at accommodation only serves to make the image more blurred; consequently the subject ceases to attempt to accommodate, and the muscular strain ceases.

Pain of muscular origin

Pain in the back of the head and neck frequently accompanies headaches in other portions of the head, such as those associated with eyestrain, sinusitis, migraine and increased nervous tension, as well as those associated with injections of histamine and those induced by spinal drainage. Electromyograms usually reveal evidences of increased tension in the scalp and neck muscles under these conditions. Prolonged contraction of these muscles probably causes a relative muscle ischemia which leads to stimulation of pain endings and results in the pain referred to the back of the head, the neck, and the upper portion of the shoulders. Relief of such headaches is frequently brought about by substances which produce vasodilatation,

such as nicotinic acid, aminophylline, and Priscol. These headaches also usually disappear a few hours after relief of the original source of irritation at a more remote point in the head.

Pain originating in extracranial blood vessels

The larger branches of the extracranial arteries are well supplied with pain sensitive endings. These are most readily stimulated by longitudinal stretch or by distention of the vessel wall. Steady stretching leads to a constant localized aching, frequently associated with nausea; intermittent stretching causes throbbing pain. Characteristically, pain elicited by stimulation of sensory endings in the extracranial blood vessels is not affected by alterations of cerebrospinal fluid pressure, but is diminished by compression of the appropriate artery proximal to the region of pain referral—that is, by diminishing the intravascular pressure. During headache associated with the extracranial arteries, the blood vessels are frequently distended, more readily palpable, and tender.

Stimulation of pain endings in the occipital arteries causes pain referred to the lateral occipital region; stimulation of endings in the supraorbital and frontal arteries produces pain referred to the eye and adjacent portion of the forehead; and stimulation of those in the superficial temporal artery causes pain referred to the temporal area in front of and above the ear.

Migraine

Migraine, a type of headache associated with stimulation of pain endings in the extracranial blood vessels, particularly those of the temporal region, is frequently preceded by a period of constriction of these blood vessels followed by vasodilatation. The increased vessel pulsation accompanying the latter appears to be the mechanism responsible for the stimulation of the pain endings. Headaches of this type may be associated with decreased urine flow and with an increased quantity of 17-ketosteroids in the urine. Such headaches are frequently abolished by ergotamine if given early, probably because the drug constricts the temporal blood vessels and thereby reduces their pulsations. Relief from these headaches may also occasionally be obtained with large doses of aminophylline given early. Without treatment, migraine headaches may persist

twenty-four hours or more, probably because of edema developing in the artery wall subsequent to the vasodilatation. No definite evidence has been provided that migraine represents an allergic response.

Hypertensive headache

If headache occurs during the course of hypertension, it is usually the same type as that which the patient had before his arterial pressure became elevated. This form of headache, which is similar to, if not identical with migraine, is also frequently relieved by ergotamine despite the fact that the arterial pressure may be simultaneously elevated by this drug. This type of headache is also frequently relieved by aminophylline.

Headache of Intracranial Origin

The only structures within the cranium which have been shown to possess pain endings are the arteries of the meninges and those at the base of the brain, the sagittal and transverse sinuses and their immediate tributary venous branches, and portions of the dura immediately adjacent to these vessels. Traction and distention of these arteries and veins, inflammation in or about the above mentioned structures, and perhaps direct pressure on the associated nerves may lead to stimulation of the pain fibers. All other intracranial structures appear to be insensitive. Headache of intracranial origin is transmitted by pain fibers in the fifth cranial nerve (which supplies in general the area in front of a vertical line through the ear), in the ninth and tenth cranial nerves, and in the upper three cervical nerves (which supply the posterior portion of the head).

Relationship of intracranial pressure to headache

Elevation of intracranial pressure by intracranial injection of saline does not induce pain. Lowering of the cerebrospinal fluid pressure, particularly with the subject in the vertical position or accompanied by jugular vein compression, does cause pain. A decrease in the cerebrospinal fluid pressure withdraws support from the brain, causing it to exert traction upon the falx and other points of connection with the dura. The lowered spinal fluid pressure also decreases the external pressure upon the blood vessels. Both mechanisms stimulate pain endings in and around the blood vessels of the base of

the brain and in the falx and tentorium. When headache accompanies elevation of intracranial pressure, it is probably not due to the elevation of pressure *per se*, but is caused by the traction upon pain sensitive structures which results from the associated anatomic or functional disturbances.

Headache associated with brain tumors

Brain tumors may not cause headache if they occur within the substance of the brain. Headache associated with brain tumors is probably due to traction upon the nerves, arteries, veins or tentoria, particularly at the base of the brain. Such headache is usually not affected by raising the cerebrospinal fluid pressure.

Vascular headache

Dilatation of the intracranial arteries is induced by histamine, nitrites, foreign proteins, fever, carbon monoxide, anoxia, and asphyxia. The pain endings in the arteries are apparently stimulated by the vessel distention in a manner similar to that seen in the case of the migraine headache associated with dilatation of the extracranial arteries. Such headaches may be brought on or aggravated by injections of histamine, or aggravated by anything which increases the intracranial arterial pulsation. In contrast to migraine and the other extracranial headaches, those of intracranial vascular origin are decreased by elevating the intracranial pressure and are increased by decreasing the intracranial pressure. These effects are due respectively to increasing and decreasing the extravascular support of the intracranial blood vessels. Pressure upon the extracranial vessels has no effect upon headache due to distention of the intracranial arteries.

Sites of Referral of Head Pain

Pain in front of a vertical line through the ear usually means irritation of pain endings supplied by the fifth cranial nerve. These endings are located in the frontal and temporal arteries, the supratentorial intracranial structures, and the superior surface of the tentorium cerebelli. Pain behind this line usually means that a subtentorial structure or the inferior surface of the tentorium is being stimulated, or that some extracranial structure supplied by the ninth and tenth cranial nerves or one of the upper three cervical nerves is being stimulated.

Eye and forehead

Pain in the region of the eye and forehead may be due to irritation of the supraorbital and frontal arteries or of the ophthalmic division of the trigeminal nerve. If of intracranial origin, such pain may be caused by stimulation of nerve endings in the intracranial portion of the internal carotid artery and the circle of Willis, the anterior cerebral artery, the middle cerebral artery, the dural floor of the anterior fossa, the cavernous sinuses, or the posterior half of the sagittal sinus and its tributaries, or it may be due to distention of the lateral ventricle or to irritation of the superior surface of the cerebellar tentorium, the superior surface of the transverse or straight sinuses, or the torcular Herophili.

Temporoparietal region

Pain in the temporal and parietal regions may be due to irritation of endings in the ophthalmic or orbital divisions of the trigeminal nerve or the superficial temporal artery; or, if of intracranial origin, it may be caused by stimulation of pain endings in the middle meningeal artery, the internal carotid artery, the middle cerebral artery and veins, or the anterior half of the sagittal sinus.

Vertex of head

Pain referred to the vertex of the head may be due to irritation in the anterior half of the sagittal sinus and tributary veins or in the sphenoid sinus.

Pain in and behind the ear

Pain in the ear alone may be due to irritation of the internal auditory artery or of the dura surrounding the internal auditory meatus. Pain referred to the ear and adjacent occipital area usually indicates irritation in the region of the petrosal vein, the dural floor of the posterior fossa, the pontine artery, the internal auditory artery, the inferior surface of the cerebellar tentorium, or the transverse or straight sinuses.

Occipital pain

Pain in the occiput and upper cervical regions may be due to irritation of the second and third cervical nerves or to distention of the occipital arteries; or, if of intracranial origin, to stimulation of pain endings in the dural floor of the posterior fossa, in the posterior meningeal artery, the posterior inferior cerebellar artery, the verte-

bral artery, the basilar artery, the occipital sinus, or the intracranial portions of the eleventh and twelfth cranial nerves.

* * * *

CLINICAL CONSIDERATIONS IN HEADACHE

JOSEPH B. STEVENS, M.D.

GREENSBORO

Paraphrasing Oliver Wendell Holmes, Van Storch said, "If I wished to show a student the difficulties of medical practice I should give him a headache to treat."

The patient with headache often finds himself a medical orphan. He is fortunate, indeed, if the headache is transient, for otherwise he may go the rounds of the ophthalmologist, otolaryngologist, neurologist, dentist, osteopath, and chiropractor. He is x-rayed, massaged, analyzed, fitted with glasses, and relieved of his turbinates and teeth, but too often emerges with his headache intact⁽¹⁾.

Headache is probably the most common complaint of mankind. It has been estimated that 70 per cent of the population has had headache at one time or another. At times in clinical practice it seems that this figure should be put at 100 per cent. No more difficult problem comes into the physician's office than the patient who has had "headaches all her life," or "a headache every day."

Etiologic Factors

The most commonly encountered headaches are vascular headaches, including migraine, and tension headaches which arise from sustained contraction of the muscles of the head and neck. The headaches associated with fever and septicemia probably rank next in frequency, and then come those associated with hypertension, that of the post-traumatic syndrome, that which follows lumbar puncture, and those due to disease of the nasal and paranasal structures, the ears, the teeth, and the eyes. In contrast, the headaches of brain tumor, brain abscess, arteritis, meningitis, subdural and subarachnoid hemorrhage, and the major neuralgias and neuritides, which call for prompt and often heroic measures, constitute a small proportion of the total number of pains of the head. Though there are few instances in human experience where so much pain may

1. Moench, L. G.: Headache, Chicago, The Yearbook Publishers, Inc., 1948.

mean so little in terms of tissue injury, failure to separate the ominous from the trivial cause of headache may cost life or create paralyzing fear.

It is not my purpose this afternoon to cover all the causes and clinical manifestations of headache in the short time allotted to me. Dr. Green has discussed the mechanisms of headache, and I think it well to bear in mind some of the major points brought out by Dr. Green in our further considerations.

Migraine Syndrome

Grimes found that "of 15,000 individuals examined in general practice with reference to migraine, 1,200 or 8 per cent were afflicted." No age, social, intellectual or economic group is immune.

There are all gradations of migraine, from trifling symptoms to the most severe, disabling illness. It is safe to say that less than half the migraine victims ever consult a physician. Migraine is difficult to investigate, because it usually disappears under the conditions of intensive laboratory study. Only slowly, therefore, has the mechanism of the headache been revealed.

Characteristics

The outstanding feature of the migraine syndrome is periodic headache; this is usually unilateral at the onset, but it may become generalized. The headaches are associated with "irritability" and nausea, and often with photophobia, vomiting, constipation, or diarrhea. Not infrequently the attacks are ushered in by scotomata, hemianopsia, unilateral paresthesia, and speech disorders. The pain is commonly limited to the head, but it may include the face and even the neck.

Other bodily accompaniments are abdominal distention, coldness of the extremities, vertigo, tremors, pallor, dryness of the mouth, excessive sweating and "chilliness." The duration of the attacks is from a few hours to several days, and they can be of any degree of severity.

Mechanisms of production

From the experimental evidence it appears that *cerebral vasoconstriction* is responsible for the pre-headache phenomena of scotomata, and that the site of the visual defect is not in the retina or orbit, but within the cranial cavity⁽²⁾. The headache itself is produced primarily by the *distention of cranial*

arteries—chiefly, but not exclusively, the branches of the external carotid⁽³⁾. Changes in the intensity of the migraine headache are related to changes in the *amplitude of pulsation of the cranial arteries*; hence, procedures that constrict the cranial arteries and thus reduce their amplitude of pulsation will diminish or terminate the headache.

Although most attacks of migraine headache are limited to the temporal, the frontal or the occipital region, some patients have pain elsewhere. Severe throbbing pain, which seems to emanate from the back teeth to the upper jaw, occasionally occurs in the face, below the eye, and behind and below the zygoma. Another variant is facial pain which spreads behind the angle of the jaw, down the neck, and into the shoulder. These latter aching sensations are sometimes associated with awareness of an unusual throbbing in the neck. The pains described can and probably do result from dilatation and distention of the extracranial portion of the middle meningeal artery between its origin and its entrance into the skull, of the internal maxillary artery, and of the trunks of the external and the common carotid arteries⁽³⁾. It has been shown that the latter structures are sensitive to pain, and the sites in which pain is felt are the face, neck, and shoulder.

It is likely, therefore, that in migraine headache the extracranial and possibly the dural branches of the external carotid arteries are the chief contributors. In fever headache and that experimentally induced by histamine, the cerebral branches of the internal carotid, the basilar, and the vertebral arteries at the base of the brain are primarily responsible.

A second mechanism of pain during the attack of migraine headache involves the *sustained contraction of the muscles of the head and neck*. Pain in the head from any cause induces secondary contraction of these muscles, which, when maintained, becomes a source of pain in itself. Although present in all, the amount of muscle spasm varies greatly from patient to patient. Such painful contractions may outlive for some time

2. Sutherland, A. M., and Wolff, H. G.: Experimental Studies on Headache: Further Analysis of Mechanism in Migraine, Hypertension, and Fever. Arch. Neurol. & Psychiat. 44: 929-949 (Nov.) 1940.

3. Schumacher, G. A., and Wolff, H. G.: Experimental Studies on Headache: A Contrast of Histamine Headache with Headache of Migraine and That Associated with Hypertension: Contrast of Vascular Mechanisms in Preheadache and Headache Phenomena of Migraine, Arch. Neurol. & Psychiat. 45:199-214 (Feb.) 1941.

the primary cause of the contraction—that is, pain from cranial vasodilatation. This fact affords an explanation for the failure of ergotamine tartrate to give relatively prompt relief to some patients who have a major muscle component in their headaches.

There is still another factor in the failure of some patients to attain prompt relief after administration of ergotamine tartrate. After several hours of migraine headache involving, for example, the temporal artery, the latter may appear prominent and distended, and become more palpable through the skin. Instead of being easily collapsible, it becomes rigid, pipe-like, and less readily compressible by the palpating finger. Also, the artery may be tender when compressed. Patients so affected report that after the first hour or two of a migraine attack the quality of the headache changes; the initial pulsating or throbbing becomes less conspicuous or is absent, and the pain becomes a steady ache. Under such conditions, ergotamine tartrate fails to abolish headache promptly or even to reduce its intensity appreciably.

To account for such changes it was postulated and subsequently demonstrated experimentally⁽³⁾ that, following the sustained dilatation of an artery of the head, a *transient change occurs in the structure of the artery wall*—namely, thickening or edema of the muscular and adventitial tissues.

Relation of personality features and reactions to migraine headache

The dominant personality features and reactions in individuals with migraine are feelings of insecurity manifested as inflexibility, conscientiousness, meticulousness, perfectionism, and resentment. These temperamental features lead to frustration; to dissatisfactions about family, financial or personal status; and to intolerance of periods of low energy in themselves, or of relaxed standards in themselves and others.

In short, certain individuals have a psychobiologic predisposition to sustained pernicious emotional states. During such states, labile physiologic mechanisms set off the chain of events constituting the attack of migraine.

Histamine Headaches

During experimental studies on the relationship of vascular disturbances to headache, it was found that histamine produces a gradual but progressive increase in cere-

bral blood flow that is independent of pressure changes. In 1925 Vallery Radot⁽⁴⁾ described a case of "vasodilatation hemicéphalique" in which unilateral episodic headache associated with epiphora and rhinorrhea was induced by vasodilators and relieved by vasoconstrictors and ice. He ascribed the origin of the condition to the sympathetic nervous system. This is probably the earliest description of what is now called histamine headache. Brickner and Riley⁽⁵⁾ in 1935 described three "atypical migraine" cases, two of which are rather characteristic of histamine cephalalgia and one of vidian neuralgia. Approximately 4 per cent of the headaches in patients observed are diagnosed as histamine headaches, and a great deal has been written in the literature in the last ten years on this particular type of cephalalgia.

Horton⁽⁶⁾ has described the characteristics of histamine cephalalgias as follows: They usually begin in the later age decades, are hemicranial, of short duration (under one hour), and tend to waken the patient at night one or two hours after he falls asleep. The pain is confined to the distribution of the external carotid artery, which is frequently tender. The pain is excruciating, constant, boring, and involves the eye, temple, neck and face. There is profuse watering and congestion of the eye, rhinorrhea or stuffiness, increased surface temperature, and often swelling of the temporal vessels. The symptoms can be reproduced by 0.1-1.2 mg. of histamine injected subcutaneously or intravenously, and can be relieved by epinephrine⁽⁷⁾.

A simple and practical method for diagnosing histamine headache is the following: From a tuberculin syringe containing 0.4 cc. of a 1:1,000 dilution of histamine acid phosphate, slowly inject 0.1 cc. intravenously and

4. Vallery Radot, P., and Blamoutier, P.: Syndrome de vasodilatation hémicéphalique, etc., quoted in Riley, H. A.: *Migraine*, Bull. Neurol. Inst. New York 2:129-541 (Nov.) 1932.
5. Brickner, R. M. and Riley, H. A.: *Autonomic Facio-Cephalalgia*, Bull. Neurol. Inst. New York 4:422-431 (Dec.) 1935.
6. (a) Horton, B. T.: *Use of Histamine in the Treatment of Specific Types of Headaches*, Collected Papers of the Mayo Clinic 32:1048-1062, 1940.
(b) Horton, B. T.: *Use of Histamine in the Treatment of Specific Types of Headaches*, J.A.M.A. 116:377-383 (Feb. 1) 1941.
- (c) Horton, B. T., and Gabrielson, M. A.: *Hypersensitivity to Cold*, J. Health & Phy. Educ. 11:119-125 (Oct.) 1940.
7. (a) Katz, G., and Cohen, S.: *Experimental Evidence for Histamine Release in Allergy*, J.A.M.A. 117:1782-1783 (Nov. 22) 1941.
(b) Schumacher, G. A., Ray, B. S., and Wolff, H. G.: *Experimental Studies on Headache: A Further Analysis of Histamine Headache and Its Pain Pathways*, Arch. Neurol. & Psychiat. 44:701-717 (Oct.) 1940.

wait three minutes with the needle still in the vein. If no headache is produced, the rest of the amount is slowly injected in from three to five minutes. If no headache is produced within ten minutes (an immediate response is usual), it may be assumed that the person is not unduly sensitive to histamine. It must be remembered that other headaches, such as those from brain tumors, may be reproduced by histamine.

Headache from Pathology in the Neck

One of the most common of all headaches is that caused by hypertonicity of the neck muscles⁽⁸⁾. Any pain in the head, neck, shoulder, chest or precordium, aggravated by movement of the cervical spine by hyperextension, coughing, sneezing or straining, is apt to be due to arthritis of the cervical spine. Thus, about 40 per cent of early morning occipital headaches are thought to be caused by spinal arthritis. In middle and advanced age groups, headaches due to this condition rank in frequency with ocular and migraine headaches. The diagnosis is often overlooked. Such headaches are particularly apt to occur in bookkeepers, typists, proofreaders, and dressmakers.

The scalenus anticus syndrome and cervical ribs are uncommon causes of headache. Atlanto-occipital lesions may cause headache.

Headache Associated with Arterial Hypertension

Studies made of the headache associated with hypertension have revealed that it is based on essentially the same mechanism as the migraine headache⁽³⁾. It is to be emphasized that this statement applies to the frequent, severe, and often incapacitating headaches suffered by hypertensive patients who may otherwise be free from symptoms. It does not apply to the so-called hypertensive encephalopathy of Fishberg, or "hypertensive crisis."

The term, "hypertensive headache," is misleading, for it implies that the frequency and severity of the headache are directly related to the level of the blood pressure. In numerous instances the headache has been present before the onset of the hypertension, and, in some patients, it changes in intensity only with the rise in blood pressure. When the artery walls are in normal contractile state,

distention does not occur, and there is no headache; but should this contractile state be impaired, as during periods of stress or fatigue, arterial distention and headache follow. In brief, high blood pressure is a necessary, but not a sufficient, condition for hypertensive headache. There is a significant relation between headache associated with hypertension and the contractile state of the cranial arteries.

Nasal and Paranasal Structures as Sources of Headache and Other Head Pain

The localization of pain associated with sinus disease is poor. Experimental stimulation of numerous sites in the nasal and paranasal structures results in pain referred to the same region; stimulation of structures near the midline results in pain referred to the same area as the pain produced by stimulation of the ostium and the more lateral wall of the maxillary sinus. Also, pain sensitivity of nasal and paranasal structures varies, the ostia of the maxillary and frontal sinuses being many times more pain sensitive than the sinus walls, which in themselves are relatively insensitive to pain.

Inflammation and engorgement of the turbinates, ostia, nasofrontal ducts, and superior nasal spaces are responsible for most of the pain emanating from the nasal and paranasal structures⁽⁹⁾. If turbinate engorgement and inflammation are absent, the headache is, in all probability, not the result of disease of the nasal or paranasal structures.

Pain in the back of the head or neck seldom results directly from irritation of the mucosa of any of the nasal or paranasal structures. Such pain is due to the secondary effects of prolonged contraction of the cervical and head muscles⁽⁸⁾. The intensity of the pain is increased by shaking the head or holding it down. The headache is intensified by anything that increases the venous pressure—for example, straining, coughing, or wearing a tight collar. It is also intensified by states that increase the engorgement of the mucosa, such as anxiety and resentment, menstruation, cold air, sexual excitement, or the effects of alcohol.

The Eye as a Source of Headache

Headache associated with various ocular disorders has been explained first as the result of sustained contraction of intraocular

8. Mithoefer, W.: Hypertonic Muscles of the Neck as a Cause of Headache, *Ann. Otol. Rhin. & Laryng.* 43:67-75 (March) 1934.

9. Kamman, G. R.: Some Painful Conditions about the Head and Face, *Journal-Lancet* 60:111-114 (March) 1940.

muscles associated with excessive efforts at accommodation; and second, as secondary to the unusually great and sustained extraocular muscle contraction resulting from the effort to produce distinct retinal images and binocular vision with fusion.

In contrast to the ocular defects just mentioned, simple myopia *per se* does not produce headache. The reason for this is that the myope, in attempting to improve his vision by the contraction of his eye muscles, actually makes his vision worse and hence soon abandons the attempt.

Furthermore, it has been established that experimentally induced hyperopia and astigmatism cause headaches, while induced myopia does not⁽¹⁰⁾. Induced extraocular muscle imbalance causes tenseness and irritability; if it is prolonged, headache develops and is associated with abnormal electromyograms from the muscles of the scalp and neck. Spontaneously occurring muscle imbalances produce the same symptoms and the same type of myograms.

In conclusion, let me say that I have not gone into the field of post-traumatic headaches or those headaches associated with anxiety and other psychosomatic states. I leave the discussion of these in other hands.

10. Seydell, E. M.: Indurative or Myalgic Headache, Arch. Otolaryng. 32:860-876 (Nov.) 1940.

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CHARACTERISTICS OF HEADACHE IN ANXIETY AND HYSTERICAL REACTIONS

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In this afternoon of discussions on subjects pertaining to what we call organic conditions, I believe it is fitting and proper for someone to speak up about psychogenic or functional disturbances. Regardless of the descriptive words involved, I start on the premise that there is no sharp dividing line between the two—organic and functional—maintaining that in organic disease there is functional overlay and that in functional disturbances there are physiologic changes accounting for the symptoms.

Hysterical Headache

In the title of this paper hysterical reactions are mentioned, and I want to dispose

of this subject at once, so far as headache is concerned. Except in children and a few adults where headache is an excuse not far below the conscious level, we rarely see headache alone as a true conversion symptom or unconscious escape mechanism. Another exception to this statement can be found in traumatic cases—particularly where compensation is involved. Headache alone as a pure conversion symptom like hysterical deafness, blindness, aphonia, or paraplegia is uncommon except in the cases just mentioned.

Headache as a Manifestation of Anxiety

In my experience the so-called functional headaches are usually associated with other physical manifestations of an anxiety state, although the headache may be the outstanding and presenting complaint. After all, anxiety is basic in all neuroses, and all anxiety symptoms can become incapacitating and be considered as conversions in the sense of providing escape from insoluble conflicts. This is not to say that there is no distinction between hysteria and anxiety neurosis or between hysterical and anxious personalities, but so far as headache is concerned it usually falls in the category of anxiety symptoms.

Characteristics

First of all, let me review the nature of this special complaint of headache as described by patients with proven anxiety conditions, where all question of an organic disease component has been ruled out. Usually the patient will spontaneously or in response to question complain of headache, but further questioning will bring out the fact that this is not a common or garden variety of headache. Frequently there is no real pain but rather feelings of discomfort, pressures from within or without, pressures localized in certain areas, stuffy feelings, burning or drawing sensations in various parts of the scalp, or impressions of a tight band around the head, weight on top of the head, and numbness or tingling in the scalp. The sensations of a claw or sharp instrument grasping the head, which were described years ago in connection with hysteria, may be present.

Of course, real pain may be complained of and may be very severe, especially in the frontal region or in the occiput, with radiation to the nape of the neck and even to the shoulders. Any or all of these symptoms may

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be localized on one side, but sometimes with extensions or radiations of the same or other sensations to the opposite side.

Another characteristic is the patient's manner of describing his symptoms if given a chance. With many gestures and a searching for right words he will outline the areas involved and show the extensions or ramifications of the various feelings. A few examples are as follows:

1. A burning sensation in a spot the size of a dime on top and to the right of midline, with tingling sensations radiating from this, especially backward and downward into the neck on both sides. When it is severe the patient feels that something is going to burst and that he will suddenly go berserk.

2. "It feels as if someone had fired a 22 bullet clean through my temples just back of my eyes."

3. Burning and numbness in an oval area above the left ear. "It starts right here and goes back to right there."

4. Right frontal feeling of pain and pressure that extends during exacerbations over the entire right side of head. "At such times it feels as if the side of the head might come off."

Many other similar descriptions could be listed—all with individual variations. Many of the descriptions will be found to resemble very closely those given by patients with brain tumor, aneurysms of cranial arteries, true migraine, nasal or ocular disorders, allergic conditions, or other organic involvements. Therefore, a differential diagnosis can rarely be made on the basis of description and localization alone.

Differential diagnosis

As has been indicated before, the usual presence of other anxiety symptoms elsewhere in the body is a very suggestive clue; but a patient with an outspoken anxiety syndrome may develop a clogged frontal sinus or even a brain tumor. Certainly such a patient should have the benefit of all necessary neurologic, roentgenologic, and laboratory studies, as well as careful consideration of ocular, nasal, and allergic conditions. Without enough such investigations to assure the patient and the doctor of the absence of organic complications, treatment remains on shaky grounds.

There are many other differential points to be mentioned. A family history of migraine or allergy is always interesting and

arouses suspicion, but is far from being a conclusive fact in diagnosis. Steiglit⁽¹⁾ has described what he considers to be a typical constitutional type in patients with migraine, but many neurotics and others without migraine fit into his description.

Alvarez⁽²⁾, Wolff⁽³⁾, Selinsky⁽⁴⁾ and others have agreed that patients with migraine have a very characteristic personality pattern. They are oversensitive, tense, quick in thought and movement, perfectionistic, and usually above average in intelligence and social charm. They have doubts, rituals, fears, and feelings of insecurity. They feel frustrated, and out of this frustration spring strong feelings of anxiety and hostility which must be repressed. Much importance is attributed to the repressed hostility as a cause of the symptoms. It is agreed that many patients with migraine are of this type, but the same is true of many patients with anxiety conditions and involutional melancholia, regardless of the presence of headache. It should be noted here that Palmer⁽⁵⁾, in a psychiatric study of nearly 500 patients with migraine, was unable to determine a clearly defined personality type. The striking feature of his evaluation was the "averageness" of the whole group.

Moench⁽⁶⁾ gives an interesting and helpful table of differential points on migraine, histamine headache, and psychogenic headache. He calls attention to the time element. Psychogenic headaches often follow or are made worse by emotional disturbances, and many patients can point out the relationship. Of course, a hangover headache becomes worse if the man goes to work in a boiler factory at 8 a.m. Moench also points out that, as a rule, headaches from organic diseases do not last "for years" or "all my life."

Another differential diagnostic point may be the reaction to certain drugs. Reaction of the patient to suggestion under Pentothal may be fairly conclusive, but it is to be remembered that pain from organic sources can be relieved temporarily by hypnotic sug-

1. Steiglit, E. J.: The Migraine Physique, *Am. J. M. Sc.* 189:359-364 (March) 1935.

2. Alvarez, W. C.: Migraine, *M. Clin. North America* 24: 1171-1177 (July) 1940.

3. Wolff, H. G.: Personality Features and Reactions of Subjects with Migraine, *Arch. Neurol. & Psychiat.* 37:895-921 (April) 1937.

4. Selinsky, H.: Psychological Study of the Migrainous Syndrome, *Bull. New York Acad. Med.* 15:757-763 (Nov.) 1939.

5. Palmer, H. D.: Migraine Headache, *Clinics* 4:531-554 (Aug.) 1945.

6. Moench, L. G.: Headache, Chicago, The Year Book Publishers, 1947.

gestion. Susselman and others⁽⁷⁾ worked out a technique for the differential diagnosis of anxiety headache, using Sodium Amytal. They injected $\frac{1}{2}$ grain intravenously, and then, after pauses for questioning, gave two more doses of $\frac{1}{2}$ grain each. "Of 34 cases with headache, 27 experienced complete relief varying from several hours to weeks. In any case relief was longer than the pharmacological effects of sodium amytal would warrant. It was impressive where headache had been unrelieved for months or even years."

Frequently, differentiation of psychogenic headache from true migraine, histamine or allergic headaches will depend on the response to such drugs as ergot preparations, histamine, Benadryl, niacin or a test with nitroglycerin.

Treatment

Not all the differential diagnostic points have been covered, but I want to go on to a very important question regarding these functional headaches. The question is, "How can we understand this symptom and how can we interpret it to the patient?" Confidence in the diagnosis, an understanding of the mechanism, and full explanation to the patient are fundamental in all the therapy. Certainly we agree that such headaches are not imaginary and that the patient does not deliberately conjure up a headache.

It is my belief that in the anatomy and physiology of headache as described by Dr. Green, we find also the answer to the functional headache. Certainly elsewhere in the body there is ample evidence that emotions bring about changes in the vasomotor, secretory and muscular systems. Wolff⁽⁸⁾ and others have demonstrated in the cerebral circulation vasomotor responses to emotions. Vasodilatation and vasoconstriction within the cranium should coincide with general arterial pressure. Muscle tension elsewhere in the body gives rise to fatigue and dull pain. If, under emotional stress, we "tense up," especially in the neck and shoulders, this tension can account for much occipital headache. Elsewhere in the body numbness, tingling, and various paresthesias commonly accompany anxiety states; why should the scalp be spared such sensations?

The head and the heart are the two most important parts of the body. When peculiar sensations appear in the head and are accompanied by inability to concentrate, the anxiety about the mental status mounts rapidly. This anxiety brings great concentration on all functions and feelings. If we concentrate with anxiety on the region of the heart or even on a knee joint, we become aware of sensations that were unnoticed before. It is as if a spotlight had been focused on a very limited area.

It is often extremely difficult to convince the patient that no organic pathology exists in the cranium, especially when doubts about sanity are present. Frequently the patient cannot believe that doctors have means of making a more accurate diagnosis of intracranial lesions than of intra-abdominal disease. Explanations about muscle tension in the occipital region, as well as paresthesias of the scalp, may be understood and accepted, but in talking about intracranial circulation we are on dangerous ground. Anemia and congestion of the brain have serious import for the layman.

By way of explanation along this line, I find it advantageous to state that a person blushes or turns pale without localized pain in the face because there is no limiting space. To this must be added the statement that people can go on blushing or turning pale throughout a lifetime, and yet produce no vascular changes in the facial vessels. Even after this explanation, the patient may harbor the fear of a vessel or something else breaking loose inside the head.

As was stated above, understanding by the patient of the physiologic causes of symptoms is a necessary starting point for psychotherapy. There is not sufficient time to discuss this topic further. My purpose has been to round out the discussion of headache by calling attention to the functional types—their characteristics, diagnosis, and etiology. Wolff and others agree that over half of the patients coming to doctors with a complaint of headache have no organic disorder that accounts for the symptom. The doctor cannot dismiss this common complaint as imaginary, or tell the patient simply that all examinations are negative. He must have a clear concept of the physiologic mechanism and be able to transmit this in simple, yet complete and satisfying, terms to his patient.

7. Susselman, S., Feldman, F. and Barrera, S. E.: Intravenous Injection of Sodium Amytal as a Test for Latent Anxiety, *Arch. Neurol. & Psychiat.* 56:567-580 (Nov.) 1946.
8. Wolff, H. G.: *Headache and Other Head Pain*, New York, The Oxford University Press, 1948.

SURGICAL MANAGEMENT OF PRESENT-DAY EMPYEMA

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Empyema of the pleural cavity now occurs infrequently. The reduction in the incidence of this disease is due to the use of antibiotic and chemotherapeutic agents. Since the introduction of penicillin, empyema rarely follows pneumonia, but is usually the result of a bizarre and frequently ominous underlying condition.

The cases that require surgical treatment usually result from bronchiectasis, lung abscess, subdiaphragmatic abscess, carcinoma, infected hemothorax, or inadequate drainage of a postpneumonic empyema. In view of the gravity of these underlying factors, our concept of empyema has changed and we have had to alter our attack on this condition. It has been our experience that an exploratory thoracotomy is indicated in any case of empyema of the pleura that does not adequately respond to chemotherapy, general supportive measures, and aspiration or closed drainage.

Virtually no patient is too ill to undergo pulmonary surgery, provided the following conditions are fulfilled: (1) restoration of blood volume and continuous intravenous use of whole blood during the operation; (2) judicious use of penicillin or streptomycin (the choice of drug depending upon the causative organism); and (3) the availability of a competent anesthetist trained to give endotracheal anesthesia.

Exploratory thoracotomy (resection of a major part of the fifth or sixth rib) provides adequate exposure to enable the operator to determine whether decortication of the lung will be sufficient or whether resection of a portion of the lung is indicated, and whether the resection should be done immediately or delayed for a subsequent operation.

Preoperative Examination and Preparation of the Patient

A carefully taken history will often elicit symptoms suggestive of chronic pulmonary disease and pre-existing bronchiectasis. An x-ray examination of the chest is made with

the patient in the anteroposterior and lateral positions. In our experience, stereoscopic films of the thorax are misleading. Fluid from the abscess is aspirated and examined bacteriologically. Penicillin or streptomycin is continued (as virtually all of these patients have received antibiotics before the surgeon is consulted), the drug depending upon the bacteria found in the aspirated fluid.

The accurate determination of blood volume and hemoconcentration, as indicated by the hematocrit reading, is a preoperative essential. We endeavor to elevate the hematocrit to a level of 48 vol. per cent or above by using whole blood transfusions. Frequently an intercostal tube is placed in the empyema pocket, but this is merely a preliminary step to the definitive treatment that follows after the cell volume has been restored to normal, and in certain cases after bronchographic and bronchoscopic examinations have been completed. When bronchial communication into the pleural cavity, or other parenchymal diseases which may warrant resection of the lobe are suspected, we advocate bronchoscopy and bronchograms.

Operative Procedure

When the preliminary studies and preparation of the patient are completed, an exploratory thoracotomy under endotracheal anesthesia and with continuous intravenous blood infusion is undertaken. If the empyema is extensive, the cavity is explored through the fifth or sixth rib bed⁽¹⁾; but when there is a relatively small cavity, a section of rib directly over the pocket is removed. The fibrin and exudate are evacuated, and decortication of the compressed lung is completed. The objective of this procedure is to re-expand the constricted lung. However, when bronchiectasis, lung abscess, or malignancy exists, we prefer in certain instances to remove the involved lung in one operation; in other cases it may be desirable to delay extirpative surgery until a later date.

Case Reports

The following case reports, illustrating several different etiologic types of empyema, may be of aid in determining the proper procedure for the management of the empyema patient.

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

From the Charlotte Memorial Hospital, Charlotte, North Carolina.

1. Sanger, P. W.: Decortication in Acute Empyema Thoracis, Surg., Gynec. & Obst. 82:71-80 (Jan.) 1946.



Fig. 1a (Case 3). Multiloculated empyema, a complication of infected hemothorax.



Fig. 1b (Case 3). X-ray of the chest made on the day the patient was discharged, ten days after decortication of the lung.

Grossly infected hemothorax (multiloculated empyema)

Cases 1, 2, and 3. Three patients—a 48 year old woman, a 40 year old man, and an 18 year old boy (fig. 1a)—all had infected, organized hemothorax resulting from stab wounds of the chest. These individuals were treated conservatively by aspiration of the blood, but in all the thoracic cavity became grossly infected. Each of these cases was managed by decortication of the lung. Each was immediately relieved of the respiratory difficulty and toxic symptoms, and was discharged in less than thirteen days after operation with the lung fully expanded (fig. 1b).

Comment: World War II taught us that cases of multiloculated empyema secondary to infected, organized hemothorax can be treated by decortication⁽²⁾. By this means we are able to salvage individuals who otherwise would probably become pulmonary cripples.

Empyema secondary to trauma

Case 4. A man, 32 years old, came to the hospital complaining of dyspnea, chills, and fever of twelve days' duration. He had suffered a severe blow to his right chest seventeen days previously, but no evaluation of his injury had been made at that time.

On admission we found a pale, dyspneic, acutely ill individual with no evidence of external thoracic

trauma. There was dullness of the right lung base. Aspiration of the chest produced a purulent exudate infected with mixed organisms. His temperature ranged from 103 to 104 F. He was given large doses of penicillin and his hematocrit was built up to 48 by blood transfusions. Bronchoscopic and bronchographic examinations showed nothing to account for his existing empyema. A catheter was placed in the eighth interspace, but his condition did not improve.

An exploratory thoracotomy was done. Foul-smelling exudate was removed and the lung freed of its constricting fibrin. The patient was discharged ten days after thoracotomy, with his lung expanded.

Comment: Since no intrathoracic lesion could be found to account for this patient's empyema, it was assumed that trauma was the causative factor. The fact that this patient was well enough to be discharged ten days after the empyema cavity was explored justifies this means of management.

Case 5. A 32 year old white man was transferred to Charlotte Memorial Hospital after having survived an automobile accident in which a two-by-four was thrust through the right side of his chest. The surgeon who first saw him debrided and closed the wounds of entrance and of exit, and gave him a transfusion of approximately 3,000 cc. of whole blood. Three weeks afterward, the lung was completely compressed (fig. 2a) and the right pleural cavity was filled with purulent exudate containing predominantly hemolytic staphylococci. At this time the necrotic wound in the second anterior interspace was open directly into the chest cavity. A catheter was inserted in the eighth interspace in the posterior axillary line as the patient was prepared for a thoracotomy.

At operation decortication was carried out, and

2. (a) Samson, P. C. and Burford, T. H.: Total Pulmonary Decortication. *J. Thoracic Surg.* 16:127-145 (April) 1947.
(b) Tuttle, W. M., Langston, H. T., and Crowley, R. T.: The Treatment of Organizing Hemothorax by Pulmonary Decortication. *J. Thoracic Surg.* 16:117-126 (April) 1947.
(c) Sanger, P. W.: Evacuation Hospital Experiences with War Wounds and Injuries of the Chest. *Ann. Surg.* 122: 147-162 (Aug.) 1945.



Fig. 2a (Case 5). Multiple fractures of ribs, with pyopneumothorax.

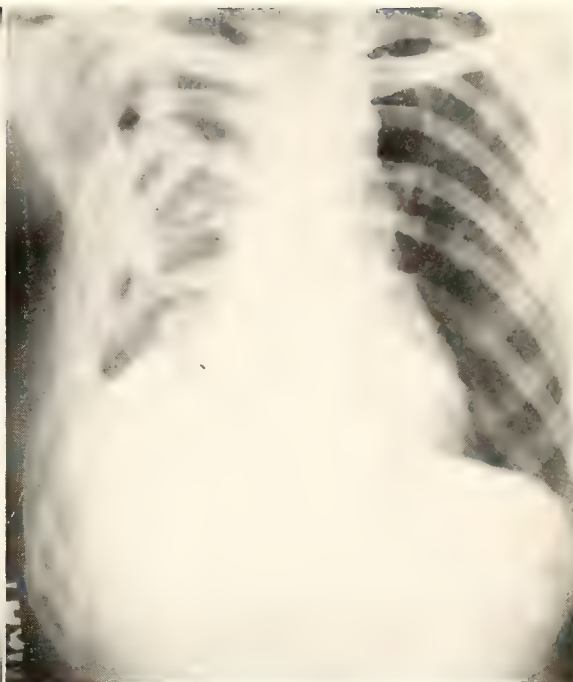


Fig. 2b (Case 5). Chest film made ten days after decortication of the lung and plastic closure of wounds in the chest wall.

the wounds of entrance and exit were further debrided and closed by plastic movement of soft tissue. The patient required 2,500 cc. of blood during this operative procedure. His postoperative course was complicated by a mild pneumothorax (fig. 2b), which resulted when one of the closed drainage catheters was inadvertently pulled out of the water. However, his recovery was delayed only a few days, and he was discharged symptomless twenty-one days after operation.

Comment: This case further emphasizes the importance of a thorough understanding of chest physiology on the part of everyone who plays any role in handling such cases.

Empyema due to bronchiectasis

Case 6. A 21 year old white female was admitted with the complaint of a knife-like pain in the left side of the chest, which had begun forty-eight hours previously, and was associated with dyspnea, chills, and fever. Her past history was suggestive of chronic bronchiectasis, the presence of which was subsequently confirmed by bronchograms.

On examination, she was mildly cyanotic and dyspneic, and obviously very ill. Her temperature was 103.6 F. and her pulse was rapid and weak. The trachea was displaced to the right, as was also the mediastinum. There was dullness in the left base and hyperresonance over the left apex. A turbid, thin exudate, containing a mixture of alpha Streptococcus and non-hemolytic Staphylococcus aureus, was aspirated. Transfusions were given to elevate the hematocrit above 48. A catheter was inserted in the eighth interspace, but adequate drainage was not secured.

Since her condition did not improve, an exploratory thoracotomy was done through the sixth rib bed and the lung was decorticated. No communication was found into the lung parenchyma. It was

thought unwise at this time to proceed with a resection of the left lower lobe, which was known to be involved with bronchiectasis. Her postoperative course was satisfactory. She was discharged from the hospital twelve days after operation, symptomless and with her lung expanded. Three months later she returned for a lobectomy. Her recovery was prompt, and she returned home ten days afterward.

Comment: Because of the history of bronchiectasis, we concluded that the sudden onset of her symptoms was due to the rupture of a bronchiectatic abscess. In view of the fact that she grew worse under conservative means, it was thought prudent to proceed with an exploratory thoracotomy. Her subsequent course justified that decision.

Case 7. A 16 year old girl was admitted to the hospital complaining of general malaise and a persistently draining sinus in the left side of the chest which had been present for three months. Her past history revealed that she had had frequent bouts of cough, chills and fever, and lobar pneumonia. The last attack, three months previously, was complicated with empyema. An open rib resection had been done for drainage of the empyema. Her symptoms of productive cough and general debilitation continued as the thoracic sinus drained profusely. The hematocrit was low. Bronchoscopic and bronchographic examinations disclosed extensive bronchiectasis throughout the entire left lung.

A pneumonectomy was done in spite of the presence of empyema. Surprisingly, the patient's postoperative course was uncomplicated. She was discharged within two weeks after operation. Two months later, however, turbid fluid was aspirated from the left chest cavity. A one-stage thoracoplasty



Fig. 3a (Case 8). Chest film showing dense empyema at base, pneumothorax at apex (From Sanger, P. W.: Exploratory Thoracotomy in the Management of Pleural Empyema, J. Thoracic Surg., in press).



Fig. 3b (Case 8). Normal lung expansion fourteen days after decortication.

sufficiently collapsed the apex. She left the hospital less than two weeks after this procedure, and has remained symptom-free.

Comment: The empyema in this case occurred following pneumonia; but it should be noted that the pneumonia was probably an acute flare-up of chronic bronchiectasis. It is also noteworthy that a pneumonectomy and thoracoplasty done in the presence of pus did not result in acute pleural infection.

Empyema secondary to liver abscess

Case 8. A veteran of World War II was seen in consultation, complaining of pain in the right side of the chest, with chills and fever of five days' duration. His army record disclosed that he had had bloody dysentery while on foreign service two years previously. There had been no recent gastrointestinal symptoms.

He was critically ill and semi-conscious, with marked shortness of breath and a temperature of 102.6 F. The mediastinum was displaced to the left and there were no respiratory movements of the right side of the chest. An x-ray showed signs of air in the right apex and consolidation at the right base (fig. 3a). No abdominal abnormalities were noted.

A thick material resembling anchovy paste was aspirated from the right side of the chest, cultures of which failed to grow any organisms. Stool examination likewise did not disclose any pathogenic organisms. Following bronchography which showed nothing significant, the patient was prepared for an exploratory thoracotomy.

Following removal of the sixth rib, the pleural

cavity was emptied of purulent, non-odorous, pasty material, and the lung was decorticated. An amebic liver abscess communicating through the diaphragm into the pleura was found. By resection of the eleventh rib, the liver abscess was drained subdiaphragmatically. A course of emetine was given. The patient was afebrile on the third postoperative day, and was discharged fourteen days after operation (fig. 3b). Two months afterward he returned to his duties as a millworker. Emetine therapy was repeated three months later.

Comment: Only by an exploratory thoracotomy could the underlying pathologic changes and the causative factor in this case be determined. Physical examination revealed no signs suggestive of liver involvement.

Pyonephritic abscess producing pleural empyema

Case 9. A woman 31 years old was admitted with the complaint of chills, fever, and a cough productive of foul sputum. These symptoms had been present for six days. A diagnosis of right pyonephrosis had previously been made on the urologic service, and she had been allowed to return to her home preparatory to a kidney operation. When she was readmitted with increased respiratory symptoms, bronchograms disclosed a communication between the right lower bronchus and the right pyonephritic kidney.

A compromising approach was made by resecting a lower rib. A large abscess (pyonephritic kidney) was entered, and the lung was freed of its constricting adhesions; the kidney was then removed by Dr. Robert McKay. Her cough and other respiratory symptoms cleared up rapidly. When the patient was seen four weeks after operation, she was free of

symptoms, and the lung was satisfactorily re-expanded.

Comment: This case represents one of the bizarre causes of pulmonary empyema. It also illustrates the type of case in which an extensive exploration of an empyema cavity is justified in order to extirpate the underlying cause.

Postpneumonic empyema inadequately treated

Case 10. A colored man complained of a cough productive of foul sputum, and an abdominal hernia. These symptoms began a few days after a "gall-bladder operation," performed ten months previously. During his convalescence he developed "pneumonia" which was complicated by empyema. The old records showed that the left chest cavity was drained by rib resection. His convalescence was further complicated by the development of an incisional hernia.

On admission to the hospital he was anemic and dyspneic, and coughed continuously. The mediastinum was displaced to the right. No breath sounds could be heard in the left lung. There was a protruding herniation in an upper right rectus scar.

A thoracotomy was done, and a thick, tenaciously adherent capsule was removed from the left lung. Bleeding was profuse, and the patient was given a transfusion of 2,000 cc. of whole blood. His post-operative course was surprisingly satisfactory. Ten days after thoracotomy the ventral hernia was repaired. Two months later the patient was making his own livelihood as a sweeper in a mill, free of all respiratory symptoms.

Comment: This patient had been inadequately treated for a postpneumonic empy-

ema ten months previously. The general debilitation and purulent drainage which he suffered could probably have been avoided by decorticating his lung originally.

Postpneumonic empyema

Case 11. A 43 year old man had had influenza four months previously, and for three weeks had suffered from general malaise, chills and fevers, and productive cough. His temperature was recorded as 103.6 F. There was no dyspnea. Pertinent findings were dullness of the right base with absence of breath sounds (fig. 4a). Foul-smelling pus which had the characteristic odor of a lung abscess was aspirated from the pleural cavity. Bronchoscopic examination showed nothing grossly abnormal.

The seventh rib was extirpated and 2,000 cc. of semiorganized fibrin and pus were removed. Then, with considerable tediousness, decortication of the lung was completed. Bleeding was severe, as it was necessary to remove a considerable portion of visceral pleura. Re-expansion of the lung was estimated to be 95 per cent complete. For the most part, the lower lobe was completely devoid of any pleural covering. Two large catheters were used to drain the pleural cavity, both of which were removed within seventy-two hours after operation. The patient's recovery was prompt and he was discharged nineteen days after operation (fig. 4b).

Case 12. A woman, aged 47, was admitted to the hospital complaining of chills and fever and productive cough of five weeks' duration. Her temperature was elevated to 101 F. There was dullness in the left posterior scapular region. An odorous, purulent, thick exudate was aspirated, from which a mixture of cocci and bacilli were cultured.

A thoracotomy was performed by resecting a segment of the sixth rib. Approximately 700 cc. of thick, foul exudate was evacuated. A well organized sheet of fibrin held the lung compressed. This was



Fig. 4a (Case 11). Posterolateral empyema pocket following influenza.



Fig. 4b (Case 11). Two weeks after decortication, the patient was clinically well.

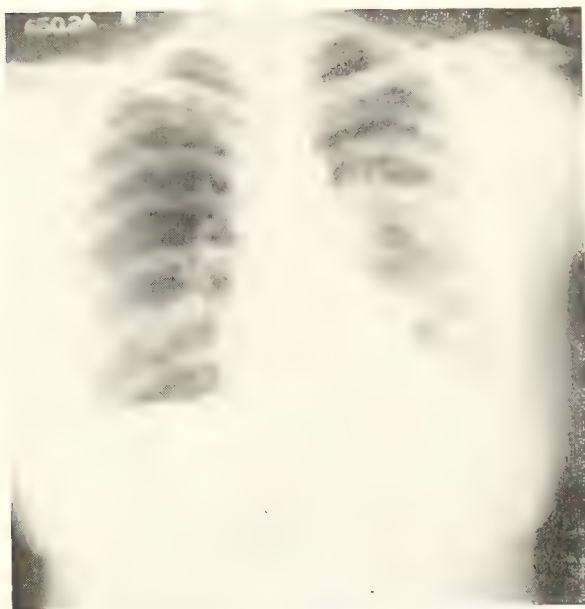


Fig. 5 (Case 12). Ten days after decortication the patient was symptomless, the lung expanded.

removed by blunt and sharp dissection. The lung bled rather freely, but re-expanded almost completely after removal of this adherent capsule. Blood was adequately replaced during the operation.

The patient's postoperative course was uneventful. She was afebrile on the third postoperative day and was allowed to return to her mountain home ten days after operation (fig. 5).

Comment: It must be recognized that the last two cases simulate the old familiar type of postpneumonic empyema. We believe now that an open thoracotomy and decortication is the treatment of choice even in these simple, uncomplicated empyemas. This belief is supported by the fact that these patients were restored to health in an amazingly short time compared with the period of convalescence required following our former treatment of open or closed drainage.

Summary

1. The universal use of antibiotic and chemotherapeutic agents has made pleural empyema an infrequent occurrence.

2. The previously unusual causes of empyema, such as bronchiectasis, lung abscess, ruptured subdiaphragmatic abscess, and infected hemothorax, now account for the majority of cases.

3. Exploratory thoracotomy is frequently necessary to uncover the underlying cause of present-day empyema.

4. This extensive operation is relatively safe if the patient is properly prepared, if whole blood is used for replacement therapy,

if antibiotics are used postoperatively, and if a competent anesthetist trained to give endotracheal anesthesia is available.

5. Cases illustrating some of the etiologic types of empyema are reported as justification for this vigorous attack on empyema.

6. There have been no deaths in our series of cases, and all of the patients have been fully rehabilitated within a comparatively short time.

Discussion

Dr. Clarence E. Gardner (Durham): My first reaction to Dr. Sanger's paper was that this is an extremely radical approach. However, on consideration and reflection, I think I can agree with most of his conclusions. His thesis is predicated on the fact that the old type of empyema is rarely seen any more. When it does occur, it usually responds to aspiration, even though his last two cases do not bear out that statement.

Since present-day empyema is usually dependent on some complicated condition, it seems reasonable that a more complicated type of operative procedure is necessary for its treatment.

These complicated empyemas, resulting from suppurating diseases of the lung, lung abscess, hemothorax, or a subphrenic abscess which ruptures into the pleural cavity, rarely respond well to simple operative procedures. Now that we have antibiotics, multiple transfusions, and good anesthesia, patients with chronic diseases of the lung can safely be operated upon.

I am not sure that it is a good idea to resect a lobe of the lung in the presence of acute empyema, but I believe Dr. Sanger said that he first employed drainage in such cases. Certainly we know that lobes of lungs and diseased portions of lungs can be resected successfully in the presence of pleural supuration.

My own experience has been greatest with patients who had infected hemothorax. There military experience has proved beyond doubt the necessity for decortication if the collapsed lung is to re-expand and the infected cavity to be obliterated.

I rather imagine that in the future decortication of the lung in chronic empyemas will make the old simple procedure of drainage obsolete. At any rate, Dr. Sanger reported one case today in which decortication cured an empyema of ten months' duration.

It always seems to me odd in the extreme that doctors who, when students, suffered from frequency of micturition before an examination, or who, when in France, had actual experience of the bowel looseness that occurred before action, should persistently refuse to seek a psychological correlative—not to save an etiological factor—when confronted with a case of functional enuresis or mucous colitis. I often wonder that some hard boiled and orthodox clinician does not describe emotional weeping as a "new disease," calling it paroxysmal lachrymation, and suggesting treatment by belladonna, astringent local applications, avoidance of sexual excess, tobacco and alcohol, and a salt free diet with restriction of fluid intake; proceeding, in the event of failure to early removal of the "tear glands."—F. G. Crookshank, quoted by Alexander Simon: *The Role of the Psychiatrist in Cardiovascular Disorders*, California Med. 69:185-189 (Sept.) 1948.

ACCIDENTAL POISONING IN CHILDREN

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More than 500 American children die annually from the accidental ingestion of poison. The actual number is probably much greater than this, since many fatalities from poisoning are not recognized as such. However, the mortality is only a part of the picture. Many children who survive the ingestion of poison are left with permanent disabilities—for example, esophageal strictures following caustic alkali (lye) poisoning. Practically all of these deaths and disabilities are caused by the ingestion of poisons contained in household agents. All could be prevented by reasonable care and precaution. All drugs and household agents containing poison should be kept away from children. The results of parents' carelessness in leaving poisons where innocent children can swallow them are truly tragic.

Lye Poisoning

The type of poisoning seen most frequently in this section of the country from a household agent is *caustic alkali* poisoning from the ingestion of lye. Since the opening of Duke Hospital eighteen years ago, more than 200 children have been treated for stenosis of the esophagus from the ingestion of lye. Commercial lye preparations contain 95 per cent sodium hydroxide, and cleansing solutions and washing powders contain 8 to 50 per cent of caustic alkali. Lye is still commonly used by poor people in the home manufacture of soap. The availability and widespread use of these materials account for the frequency of lye poisoning, especially in small children, despite the publicity which has been given it.

If the patient is seen immediately after the ingestion of the alkali, an attempt should be made to neutralize the corrosive with a weak acid such as dilute vinegar, lemon juice, or orange juice. Gastric lavage is not indicated, as the alkali is neutralized in the stomach by hydrochloric acid; furthermore, it is doubtful if much of the alkali reaches the stomach, since the first swallow causes

severe pain and very little is taken. The oral cavity should be examined carefully for damage to the uvula, soft palate, or other parts of the posterior portion; such damage is usually an indication that some alkali has been swallowed and that erosion of the esophageal mucosa has probably occurred. The patient should be given a sedative if he is restless, and the diet should consist of fluids and soft, nonirritating foods. If erosion of the esophageal mucosa is suspected, a soft rubber, eyeless catheter, filled with mercury or small lead shot, should be passed into the stomach at intervals to help prevent the formation of a stricture. The dilatations are usually begun on the fourth day after the ingestion of the alkali and are repeated daily for two weeks, during which time the size of the catheter is gradually increased until a number 32 or 34 catheter is passed with ease. Dilatations are then done at less frequent intervals, but should be continued for at least a year. X-ray examination after a barium swallow is helpful in detecting esophageal damage and early stricture formation.

If a patient is seen several days or weeks following the ingestion of the alkali and presents the symptoms of partial esophageal obstruction, one should not pass catheters blindly but should do barium studies and esophagoscopy to determine the nature and extent of the esophageal damage. Peroral dilatations through the esophagoscope may be performed if there is a single strictured area which is not severe, but gastrostomy and retrograde dilatations are safer if multiple or very narrow strictures are found. Surgical procedures recently devised to correct esophageal strictures will be used more often in the future.

Kerosene Poisoning

The next most common type of poisoning is kerosene poisoning. Kerosene is often left carelessly about the home in a soft drink bottle, and thirsty toddlers do not hesitate to sample it. Kerosene poisoning may be followed by acute toxemia with depression, severe pneumonia with fever, or severe pneumonia with degenerative changes in the liver, kidneys, lungs, and heart. Treatment consists in cautious lavage of the stomach; an effort should be made to prevent gagging and any aspiration of the gastric contents, and 30 to 60 cc. of olive or mineral oil should

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Read before the Second General Session, Medical Society of the State of North Carolina, Pinehurst, May 5, 1948.

be left in the stomach. Until recently the use of gastric lavage has been considered dangerous, but the work of Deichmann and his co-workers⁽¹⁾ has demonstrated that changes in the lungs can also be due to absorption from the blood stream. Emetics, however, should never be used in cases of kerosene poisoning.

Sodium Fluoride Poisoning

Sodium fluoride poisoning resulting from the ingestion of roach powder is a very lethal type of poisoning, and the ingestion of any appreciable amount of this substance causes death within eight hours if prompt therapy is not given. The symptoms usually consist of severe hematemesis, abdominal cramps, weakness, shallow respirations, and eventual respiratory failure. Hematuria is not often mentioned, but severe damage to the tubules and glomeruli of the kidneys has been reported. Treatment consists in immediate lavage of the stomach with any soluble calcium salt (chloride or lactate, for example) to change the soluble sodium fluoride to the insoluble and innocuous form of calcium fluoride. Calcium should also be given intravenously and intramuscularly. Supportive treatment should be carried out as necessary.

Case Report

A 12 month old boy was admitted to Duke Hospital on September 8, 1947. At noon on the same day his mother had noted that he was irritable, but he ate his lunch. Two hours later he vomited a small amount of blood. The hematemesis continued in progressively larger amounts. Five hours later (four hours prior to admission) the parents noted that the child had gross hematuria and a yellow tint to his skin, and that he was restless.

On admission the infant was drowsy but responded well to stimuli. The urine in the diaper was grossly bloody. The skin was markedly icteric, but the scleras were clear. The urine contained albumin (1 plus) and many red blood cells in a centrifuged specimen; the benzidine test was positive. The blood count showed 28,000 white blood cells. The blood nonprotein nitrogen was 44 mg. per 100 cc. The results of other examinations were negative.

On close questioning, the mother stated that the child had the habit of putting everything in his mouth. She denied poisoning, but stated that they had moved into a new home that very morning and that "anything could have happened."

On the suspicion that the patient had swallowed roach poison (sodium fluoride) his stomach was lavaged and 30 cc. of calcium gluconate (10 per cent) was left in the stomach. Five cubic centimeters of 10 per cent calcium gluconate was given intravenously and 5 cc. intramuscularly. A transfusion of 180 cc. of whole blood also was given on the day of admission, and repeated the following morning.

1. Deichmann, W. B., Kitzmiller, K. V., Witherup, S., and Johansmann, R.: Kerosene Intoxication, *Ann. Int. Med.* 21:808-823 (Nov.) 1944.

The parents at this time returned with samples of roach powder that had been scattered all over the house by the departing tenants. The patient was placed on a high protein and high carbohydrate diet, and was given sodium bicarbonate and ascorbic acid. By the second hospital day the child was eating well and did not appear ill, although the albuminuria and hematuria persisted for seven days. He was discharged on the ninth hospital day in good condition; his blood nonprotein nitrogen at that time was 34 mg. per 100 cc.

Barbiturate Intoxication

The widespread use of sedatives by the general population has led to a marked increase of barbiturate intoxication in children. Symptoms of acute poisoning are referable largely to the nervous and cardiovascular systems. A period of excitement and hallucinations may precede the depression. Respiration is soon affected. The resulting anoxia may cause capillary dilatation and permeability resulting in shock. The activity of the reflexes is usually inversely related to the intensity of the depression. The pupils usually react to light and may be dilated or constricted. Blood pressure falls rather late. Urination may be decreased or suppressed. The temperature falls, and the skin is cold, moist, and cyanotic.

The diagnosis is usually made from the history and physical examination. Differentiation from the poisoning caused by other central nervous system depressants or from coma due to other causes may be difficult. Identification of the drug in the gastric content or urine is usually necessary.

The prognosis is dependent upon the amount and type of barbiturate ingested, and on the efficacy and promptness of therapy. If the patient survives the first twenty-four to thirty-five hours, the chances of recovery are usually favorable. Death may occur as a result of paralysis of the respiratory center.

Treatment consists of gastric lavage with warm water. Emetics are of little value and may add to the depression. Potassium permanganate in a 1:2000-1:5000 solution may be effective in some instances. Magnesium sulfate left in the stomach may facilitate excretion of barbiturate by the intestine. Measures to maintain respiration and blood pressure should be instituted.

Lead Poisoning

Lead poisoning in children, though perhaps not as common as in the past, still occurs frequently enough that one should be

alert for the symptoms whenever they appear.

Case Report

On November 7, 1947, a 7 year old white boy was admitted to Duke Hospital in a moribund condition. He had had convulsions, generalized weakness, anorexia and constipation for two weeks. He expired before a complete examination could be made. However, marked papilledema was observed, and it was thought that he had had a brain tumor or tuberculous meningitis. No autopsy was obtained.

Five days later, on November 12, 1947, his 5 year old brother was admitted with similar complaints. This child was irritable and had severe generalized weakness. He also had marked papilledema. An alert resident (Dr. H. B. O'Rear) became suspicious of lead encephalitis and began asking leading questions. The source of lead was discovered to be from the burning of battery casings in the home. On further examination of the child, a lead line was seen at the gum margins, and x-rays of the long bones were typical of lead poisoning. The spinal fluid findings were consistent with the diagnosis of lead encephalitis. The child was treated vigorously and responded well.

Lead poisoning can be obtained by ingestion of lead, inhalation of lead, or absorption of lead from the skin (rarely seen in children). Poisoning by inhalation of lead from burning battery casings which contained lead sulfate and peroxide was first discovered by an observing intern (Dr. Mirion Bailey) at the Harriet Lane Home in 1932. The symptoms of lead intoxication, whether from ingested or inhaled lead, are similar. Since lead is absorbed more rapidly and completely from the respiratory tract, however, the symptoms are more severe when lead is inhaled.

The gastrointestinal symptoms are vomiting, anorexia, and constipation. Anemia due to destruction of the red blood cells may be moderate or severe; basophilic stippling is practically always present. The deposition of lead sulfide on the gum margins results in the lead lines seen in children after the teeth have erupted. Meningo-encephalitis is suspected when there is mental confusion, convulsions, and projectile vomiting. Papilledema or optic atrophy may be discovered at this time. This is a severe complication, and the mortality rate in such cases is high (35 per cent). Neuritis is rare. X-rays of the long bones are diagnostic in children, for they will show a zone of increased density at the ends of the bones beneath the epiphyseal line.

After the source of lead has been removed from the child's environment, treatment consists in the administration of sodium citrate, 0.3 Gm. every four hours (citrate

ions combine with lead to form an insoluble and harmless complex which is slowly excreted), large doses of ascorbic acid, a diet rich in calcium, and calcium gluconate by mouth.

BAL (2, 3 dimercaptopropanol, British anti-lewisite) is a good antidote for mercury, arsenic, gold, and cadmium poisoning. It is less effective for lead and silver, and practically ineffective if tissue damage is extensive. It should, therefore, be given as soon as possible, and its administration should be continued until the urinary excretion of the metals is at a minimum. The dosage recommended is 3-4 mg. per kilogram intramuscularly every three to four hours. Since this amount is about half the toxic dose, undesirable side effects are encountered. These include lacrimation, salivation, nausea, vomiting, fall in blood pressure, and pulmonary edema. The previous administration of ephedrine may alleviate many of these symptoms.

Miscellaneous Types of Poisoning

Reports of *aniline dye poisoning* among infants are fairly numerous. All of the patients except one have been newborn infants poisoned by contact with diapers freshly stamped with material containing the aniline dye. One instance of *paranitraniline poisoning* from the ingestion of waxed crayons has been reported. Aniline dye poisoning may cause severe degrees of cyanosis due to methemoglobinemia. The infants are apathetic, gasp for air, and may have convulsions.

Treatment consists in removing the source of the dye immediately and placing the infant in an oxygen box. If the cyanosis is alarming, methylene blue should be given.

Mothballs composed of naphthalene are not highly toxic but may become more dangerous in the presence of oil. Naphthalene is practically insoluble in water and most of it is passed unchanged in the feces. Treatment should consist of copious lavage with tap water.

Deodorants are usually a solution of an aluminum salt and are practically harmless. *Depilatories* contain barium or sodium sulfide, which is fairly innocuous. However, thallium acetate, which has been used in depilatories, is very toxic, causing severe gastrointestinal symptoms and cerebral symptoms. Treatment should consist of

lavage with sodium thiosulfate, calcium by mouth, and sodium thiosulfate by vein.

Phosphorus poisoning may occur from eating rat poison or from certain fireworks such as the giant torpedoes. Matches do not contain the dangerous form of phosphorus at the present time. The gastrointestinal symptoms are similar to those reported with sodium fluoride poisoning. Hematemesis may be severe. In the later stages cardiac and respiratory failure develops, sometimes accompanied by delirium, coma and death.

Oily or fatty materials such as milk should never be given these patients, as they aid the absorption of phosphorus. Prompt lavage with a 1:5000 solution of potassium permanganate will change the poison to innocuous phosphoric acid; irrigation should be continued until the returning fluid is clear. Some magnesium sulfate should be left in the stomach. Intravenous glucose and molar lactate should be given as necessary for acidosis.

Phenolphthalein: The candy cathartics such as Ex-Lax and Phenolax contain phenolphthalein, have an agreeable taste, and are frequently taken by mistake. Usually a violent catharsis is the only outcome. Occasionally an eruption occurs several hours later. Hyperpyrexia, hemiplegia, petechiae, ulcers in the mouth, anuria, coma, and cardiac and respiratory failure have been reported. Treatment consists in immediate lavage or emesis, together with symptomatic therapy.

Strychnine poisoning, although not as common now as in the past, is still responsible for many deaths in children. Bright-colored, sugar-coated cathartics and tonic tablets are responsible. Hinkle's Cascara Tablets with strychnine sulfate (1/60 grain or 0.001 Gm.), A.B.S. tablets (aloes, belladonna, and strychnine), Alophen Pills, and many others are left carelessly about where children can get hold of them. The symptoms develop in one to three hours, depending on the solubility of the tablets. The convulsions resemble the convulsions associated with tetanus.

Treatment: Control the convulsions with intravenous sodium pentobarbital or Avertin by rectum. Avoid lavage until the convulsions are controlled; then lavage the stomach with a 1:5000 solution of potassium permanganate or a tannic acid solution. Give activated charcoal in water by mouth or stomach

tube. Start supportive therapy where necessary—artificial respiration, oxygen, and so forth.

In *salicylate* poisoning toxic reactions are usually mild, but they may be serious. Headache, dizziness, ringing of the ears, auditory and visual difficulties, mental confusion, sweating, thirst, nausea, and vomiting may be observed. Skin reactions sometimes occur, and children may have some fever. Stimulation of the central nervous system may produce restlessness, incoherent speech, mania, delirium, and hallucinations. Respiration may resemble that observed in diabetic or renal acidosis. Depression, stupor, and coma may follow, and convulsions may be present. Death is usually due to respiratory failure.

The treatment is largely symptomatic. Gastric lavage should be used in acute cases, and the fluid and salt loss should be replaced. Intravenous glucose, caffeine, and ephedrine may be of value.

Stramonium poisoning (jimson-weed, thorn apple, stinkweed, and so forth): All parts of the plant are poisonous, but especially the seeds, which contain atropine, scopolamine, and hyoscyamine. The symptoms first noted are thirst and disturbance of vision. The pupils are widely dilated and do not react to light and accommodation. The skin is hot and dry. Mental confusion, convulsions, and maniacal tendencies are often present.

Treatment: Lavage the stomach with weak tannic acid solution (4 per cent); administer magnesium sulfate. Small doses of pilocarpine are useful. The patient should be kept in a quiet, dark room, and sedatives should be given as necessary to control convulsions and motor activity.

Conclusion

In the handling of cases of acute poisoning in children, the following principles should be kept in mind:

1. Identify the poison as soon as possible, so that specific measures may be promptly instituted. The label on the container, if still present and legible, will give the ingredients and also the antidote to use.
2. Remove the bulk of the poison from the stomach by gastric lavage or an emetic (1 tablespoonful of mustard or 2 tablespoonfuls of salt to a glass of warm water). Emetics should never be

used in cases of kerosene and caustic alkali poisoning, or if the patient is semi-comatose.

3. Administer an antidote for the residual poison not removed by gastric lavage. When a stomach tube is used, leave the antidote and other remedies in the stomach before removing the tube.

4. Give an antagonist when available.

5. Administer symptomatic treatment as indicated.

6. When the nature of the poison is unknown, one may safely give the following universal antidote:

Pulverized charcoal (burnt toast), 2 parts

Tannic acid (strong tea), 1 part

Magnesium oxide (milk of magnesia), 1 part

One gram of charcoal will absorb 40 mg. of phenol and more than 500 mg. of strychnine. The tannic acid precipitates alkaloids, certain glucosides, and many metals, while the magnesia serves to neutralize acids.

VISUALIZATION AND PHOTOGRAPHY OF THE UTERINE CANAL

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Hystero-graphic Examination

The injection of an opaque dye into the uterine canal has previously been used principally to determine the patency of the fallopian tubes. During the past few years, however, hystero-graphs have been employed for the diagnosis of pathologic conditions of the uterine canal. Submucosal myomas and polyps, which often cause bleeding from the uterus, are difficult to diagnose either by palpation or by curettage. However, when an opaque dye is instilled into the uterine canal a submucosal myoma, polyp, or cancer of the fundus is usually easily seen upon an x-ray film.

After one becomes acquainted with the variations in a normal hystero-graph (fig. 1), it is easier to recognize defects produced by pathologic lesions. A well rounded defect of the uterine canal (fig. 2A) is probably a polyp or a submucosal myoma. These vary in size, sometimes filling the uterine canal.

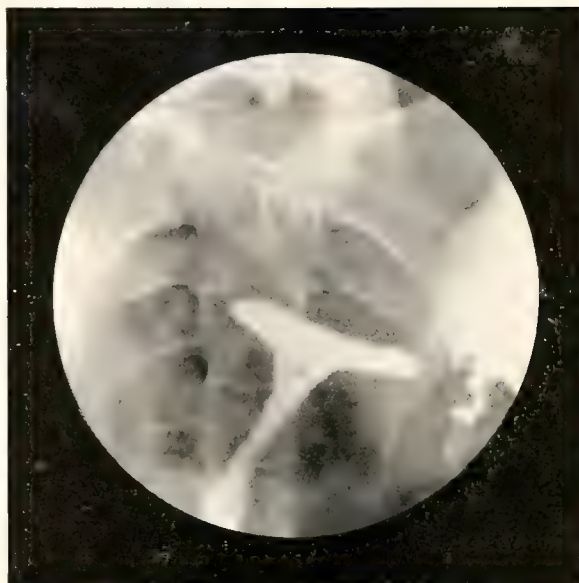


Fig. 1. Hystero-graph of a normal uterus.

Very small polyps in the fundus are not always the cause of bleeding. However, the same sized polyp near the cervix or in the cervix may produce vaginal spotting. Multiple submucosal myomas do not always protrude very far into the uterine canal, but usually protrude enough to cause more or less "shelving" of the dye—that is, a shading out of the dye which is interpreted as due to pressure extrinsic to the uterine canal.

Occasionally a defect which is more or less smooth in outline can be caused by a localized proliferation of the endometrium rather than a true polyp or submucosal myoma. However, the very definite punched out area characteristic of a polyp or submucosal myoma is usually not seen in cases of endometrial hypertrophy. The punched out area produced by localized hypertrophy of the endometrium is seen as a light shading of the dye and not as a true defect.

Carcinoma of the fundus can produce varied patterns in the hystero-graph (fig. 3A and 4A). There may be slight irregularities of one wall, or, if the carcinoma is very extensive, a lace-like appearance throughout the canal. The defect produced by carcinoma of the fundus may be similar to that seen in marked hypertrophy of the endometrium. Carcinoma of the fundus cannot be definitely diagnosed by hystero-graph alone, but this method can serve as a lead to further investigation. If there is doubt as to the cause of the defect seen in a hystero-graph, direct

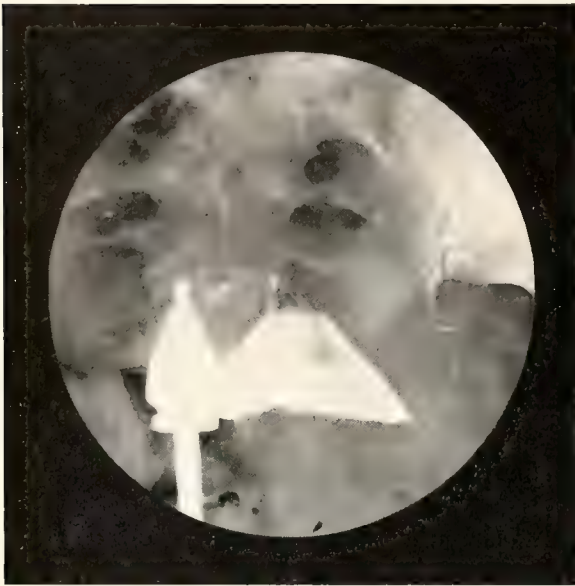


Fig. 2A. Hystrogram showing a pedunculated polyp of the fundus. Note the opaque acorn shadow.



Fig. 3A. Hystrogram showing a carcinoma of the fundus.

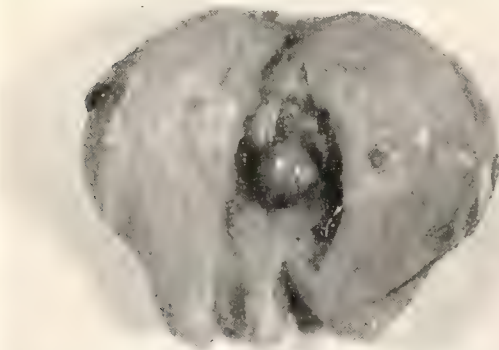


Fig. 2B. Polyp of the fundus removed from the patient whose hystrogram is shown in figure 2A. The uterus contained many fibroids in the serosa.



Fig. 3B. Carcinoma of the fundus shown in figure 3A, removed at operation. The diagnosis was made by hysteroscopic examination.

inspection of the uterine canal should be carried out by a lens system which will be described later.

Method of examination

A hystrogram can be made in the office, and unless there is marked constriction of the cervical canal it causes very little discomfort. A cannula with a detachable catheter tip is inserted very easily into the average uterine canal. Near the end of the cannula is a plastic acorn which is transparent to x-ray. The purpose of the acorn is to prevent a reflux of the dye around the cannula.

The cannulas which we used previously had a fairly large rubber tip which was opaque to x-ray and often obscured pathologic lesions of the uterine canal. With the plastic acorn which we have devised (fig. 5A), only the small tip of the cannula may be seen in the hystrogram.

It is preferable that the dye be injected into the uterine canal when the patient is not bleeding. If the patient is bleeding continuously, we attach a light rubber tissue bag (fig. 5B) to a catheter and instill the dye through the bag. In this way there will be no contact of the dye with the endometrium. This method, however, requires dilatation of the cervix under anesthesia.

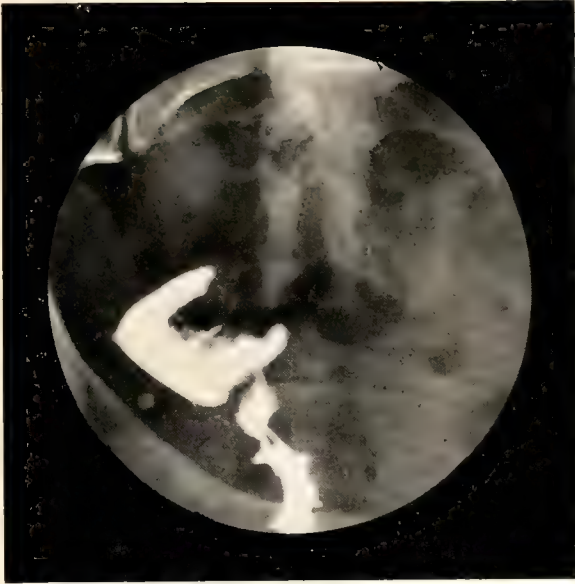


Fig. 4A. Hystero-gram showing a carcinoma of the fundus.

Hysteroscopic Examination

In cases with filling defects in the hystero-gram, we have used a lens hysteroscope for direct visualization of the interior of the uterine canal. By this combination of x-ray examination and direct inspection, diagnosis of pathologic lesions in the uterine canal is made much more accurate. Various optical instruments have been used in an attempt to get a clear view of the canal.

Attempts to develop a suitable instrument

Many years ago we attempted to study the uterine canal with the aid of a hollow metal tube and reflected light. Because only a small portion of the uterine canal was seen by this method and because blood running into the tube obscured proper vision, this method was soon abandoned.

During the past several years we have attempted to develop an instrument through which the uterine canal could be visualized directly. A lens instrument which could produce slight dilatation of the uterine canal in certain cases and in which the field of vision would not be obscured by blood was sought. We have used various lens systems—the forward vision telescope, the foroblique lens, and the right angle vision lens—in an attempt to construct a suitable instrument. Regardless of the type of lens system used, it was necessary to prevent blood from adhering to the lens system and obscuring vision, and also at times to produce slight dilatation



Fig. 4B. Carcinoma of the fundus removed from the patient whose hystero-gram is shown in figure 4A. The diagnosis was made with the hysteroscope.

of the small uterine canal for proper vision.

At first we used a small transparent rubber tissue bag over the end of the optical instrument, thinking that the pressure inside the bag would control hemorrhage by distending the uterine canal slightly, and would also prevent the clotting of blood on the lens of the optical system. This method was found partially satisfactory in detecting submucosal myomas and polyps, but the bag was not transparent enough to allow any study of the endometrium itself. In the large uterine canal fairly good vision could be obtained by this method, particularly if water instead of air was used in the rubber tissue bag. This method was abandoned, however, because wrinkling of the bag in the small uterine canal obscured the view.

Later we devised a transparent plastic tube, seven inches in length (fig. 5C), which could be slipped over the end of the optical instrument. The view obtained by this method was very good, but since a right angle lens had to be used with this device, only a limited area could be studied at one time.

There were three drawbacks to the plastic sheath: (1) the limited side view of the uterine canal which was obtainable; (2) the



Fig. 5. Instruments used in the study of the uterine canal.

- A. Cannula with plastic acorn used to inject dye into the uterus
- B. Rubber tissue bag used for injection of dye into the uterus of patients who are bleeding continuously
- C. Transparent plastic sheath formerly used over the optical system of the hysteroscope
- D. Hysteroscope employed at present, made up of two airtight metallic sheaths. The inner sheath contains the optical system.

difficulty of inserting the plastic sheath past a protruding submucosal myoma; and (3) the fact that the optical system scratched the inner surface of the sheath, making it opaque in a short time. An effort was made to overcome the first disadvantage by using a forward vision telescope in the plastic sheath. This did not prove satisfactory because light waves reflected against the lens from the rounded end of the sheath made a glare which could not be removed. The third drawback was overcome by substituting for the plastic sheath a pyrex glass tube, coated with silicon vapor to repel blood and prevent clotting. This method was abandoned because

of the risk of breakage.

Our experience with the rubber tissue bag and with the plastic and glass sheaths taught us that the best method for studying the uterine canal would be by a forward vision telescope, which should have very free motion through the cervix. It was believed that the problem of dilating the small uterine canal for observation could best be solved by air injection.

Instrument employed at present

The hysteroscope that we use at present (fig. 5D) is composed first of a metallic sheath, similar to a urethroscope, and con-

taining a metal obturator. After this sheath is inserted through the cervical canal to the uterine canal, the obturator is removed. A second metallic sheath containing the optical system and closed at the end with a transparent window is then inserted through the first sheath. The second sheath may be readily moved back and forth for observation of the uterine canal. The two sheaths that cover the optical system are airtight. When the first sheath is inserted into the uterine canal, equal air pressure is obtained between the interior of the uterine canal and the outside air. Then when the second closed sheath is inserted, it carries a column of air into the uterine canal, causing slight dilatation for a period of time. The slight dilatation of the canal thus produced is advantageous in the small canals.

Method of examination

The preparation of a patient for hysteroscopic examination is similar to that for dilatation and curettage. Pentothal sodium or a low spinal anesthetic may be used. After the cervix is dilated and the first sheath of the hysteroscope is inserted, the patient's head may be tipped in a Trendelenburg position. Then the second sheath containing the optical system is introduced for observation. Any projecting submucosal myoma or polyp or any malignant lesion can be seen shortly after the tip of the sheath passes the cervix; then if closer observation is necessary, the optical system can be easily carried forward to the site of the growth.

In the average uterine canal, the best view can be obtained either just after the instrument passes through the cervix or after it has been carried into the fundus and is being slowly withdrawn. In the small uterine canal, even with slight air dilatation, vision is not as good when the instrument is being pushed forward into the uterine canal as when it is being withdrawn.

For purposes of further study, photographs of the uterine canal (fig. 6) may be made by a camera attached to the optical system. We have used both the Robot camera and the Leica camera with equally good results. The time of exposure varies according to whether black and white or colored films are being used. For the colored films it was found that a three minute exposure probably gives best results; for black and white films, the time of exposure is much less. The photographs that we have of the



Fig. 6. Photograph of the interior of a uterus made through the hysteroscope.

interior of the uterus have been made through the right angle scope, which permits a view of only a portion of the wall of the uterus. As yet we do not have a photograph of the entire canal, which may be obtained through the forward vision telescope.

Through the hysteroscope a carcinoma is seen as a whitish gray growth against a red background; the contrast in color is much greater than it appears in the specimen after removal. In a few cases of carcinoma of the fundus that we have observed through the hysteroscope there was no doubt as to the presence of a malignant growth. In doubtful cases, however, a curettage is the only safe way to determine the presence or absence of a carcinoma of the fundus. An operating hysteroscope through which a biopsy specimen may be taken under direct vision is being constructed at present.

Summary and Conclusion

In many cases, the cause of uterine bleeding can be determined by x-ray examination following the injection of a contrast medium into the uterine canal. When this procedure does not permit a positive diagnosis, a hysteroscopic examination of the interior of the uterus should be made, and followed by curettage if necessary. A new instrument for making this examination has been described.

The hysteroscopes which are reproduced with this article were made by Dr. Ignacio Bird of Greensboro.

INSULIN HYPOGLYCEMIA IN DIABETES MELLITUS

CHARLES W. STYRON, M.D.

RALEIGH

Insulin hypoglycemia occurs so frequently that it remains an important complication of diabetic treatment. In an effort to determine the incidence and manifestations of insulin hypoglycemia, I have made a study of all cases occurring in the George F. Baker Clinic⁽¹⁾ of the New England Deaconess Hospital over a four month period, and of all cases occurring in my private practice at Rex Hospital for a two year period—a total of 175 insulin reactions in 702 diabetic admissions⁽²⁾. In each case the blood sugar, urine sugar, and especially the clinical features of hypoglycemia were recorded.

Data Obtained on One Hundred and Seventy-Five Cases

In the 702 diabetic admissions, the 175 insulin reactions were limited to 90 patients—a fact which indicates that a patient who has one reaction is apt to have a second or a third. The ages of the patients (table 1)

Table 1

Ages of Patients	
Age (Years)	No. Cases
4-9	4
10-29	42
30-44	19
45-59	15
60-78	10
Total	90

varied from 4 to 78 years, the duration of diabetes from a few months to twenty years, and the duration of insulin treatment from the initial dose to twenty years. In 34 patients the blood pressure was above 140 systolic, 90 diastolic.

A study of the group as a whole showed that the patients were undergoing rapid treatment and that the dosage of insulin was changing frequently—in some patients, daily. This series of cases would indicate that insulin reactions may be expected in 13 out of every 100 diabetic admissions when an attempt is being made to regulate the dosage of insulin; the majority of these reactions will be mild.

The lowest blood sugar recorded in this series was 15 mg. per 100 cc. in a 28 year old woman who was taking 16 units of crystalline insulin and 40 units of protamine zinc insulin. The highest blood sugar recorded in any case diagnosed clinically as an insulin reaction was 78 mg. per 100 cc. The smallest dose of insulin resulting in hypoglycemia was 16 units of protamine zinc, and the highest was 44 units of crystalline and 80 units of protamine zinc. Patients requiring larger doses of insulin naturally had more reactions. Hypoglycemia was also more common in younger patients who were more active or whose activity varied from day to day. The incidence of reactions was higher in patients taking protamine zinc insulin together with regular or crystalline insulin than in those taking protamine zinc insulin alone.

Some important features of insulin hypoglycemia in this group of cases are shown in table 2. The onset was considered sudden in 93 and gradual in 82. Of those who ex-

Table 2

Features of Insulin Hypoglycemia One Hundred and Seventy-Five Reactions in Ninety Patients

Type of insulin	No. Cases
Protamine zinc	27
Protamine zinc clear	62
Globin	1
Time of onset	
Before breakfast	80
Before dinner	68
Before supper	27
Nature of onset	
Sudden	93
Gradual	82
Preceded by aura	140
Symptoms	
Tremor	151
Sweating	145
Hunger	130
Abnormal vision	50
Pain	38
Nausea	13
Vomiting	7
Mental state	
Aberrations	23
Drowsiness	12
Unconsciousness	15
Convulsions	6
Reflexes	
Hyperactive	16
Absent	0
Babinski	5
Blood sugar (mg. per 100 cc.)	
0-39	23
40-59	88
60-79	64
80 and above	0
Urine sugar	
Present	29
Absent	146

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

1. Directed by Elliott P. Joslin, M.D.

2. One hundred and fifty insulin reactions from the George F. Baker Clinic, 25 from Rex Hospital.

perienced a sudden onset, some awoke with hypoglycemia. The most common symptoms were tremor, sweating, hunger, abnormal vision, and headache. Nausea or vomiting was rare. Although nervousness was present in almost all of the patients, the more extreme signs of mental change were fortunately rare. These signs included aberrations such as delirium, delusion, anger, crying, and extreme excitement; drowsiness requiring strong stimulation to arouse the patient; unconsciousness; and convulsions. Reflex changes were not common, although in 5 of the patients a positive Babinski reaction was found during hypoglycemia and cleared up following treatment. The blood sugar as a rule was not uncommonly low, for treatment in most instances was begun promptly. It is important to note that in 29 cases the urine contained sugar. In such cases, if the patient was asked to void again in a few minutes, the urine was invariably sugar free.

Questions Concerning Insulin Hypoglycemia

Among the questions which arise concerning insulin hypoglycemia are the following: (1) What are the most common signs and symptoms which make the reaction easily recognized? (2) What time of day are reactions most likely to occur? (3) What are the dangers of hypoglycemia if promptly treated? (4) What are the dangers if not promptly treated? (5) What are the dangers of allowing hypoglycemia to occur in patients who have pre-existing physical defects—particularly vascular disease of the heart and brain? (6) Are there any atypical signs and symptoms of insulin reaction? (7) What is the best form of treatment? I have attempted to answer these questions on the basis of data obtained in this study.

What are the most common signs and symptoms which make the reaction readily recognized?

This question is answered in part in table 2. Experienced patients come to rely on certain early symptoms which presage the reaction. The most common ones are nervousness; cold sweat of the hands, forehead, and lips; tremor; dimness and at times double vision; hunger; and headache. Reactions to protamine insulin are at times accompanied by nausea, vomiting, and a dull headache.

Often the new diabetic who is already nervous about the possibility of a reaction may think he is having one when he is not,

and may even respond to orange juice. Personal attention without the orange juice may have the same good effect. An example is the case of a 53 year old woman with diabetes of five years' duration, who was beginning insulin treatment. On the third hospital day at 11 a.m., the patient felt certain she was having an insulin reaction, and she was given orange juice with relief. The next day, when the symptoms recurred, the blood sugar was found to be 180 mg. per 100 cc. The discovery of this fact was useful to both the patient and the doctor.

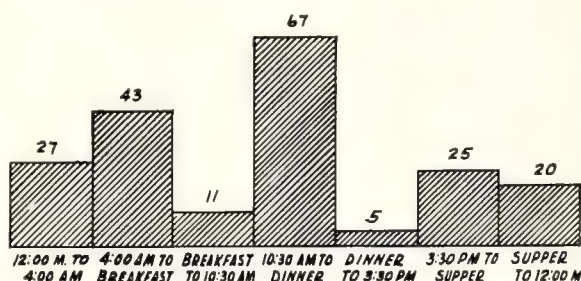


Fig. 1. Time distribution of 175 insulin reactions occurring in 90 patients.

What time are reactions most likely to occur?

This question is answered by figure 1. In patients who were on protamine zinc insulin alone reactions were most likely to occur between midnight and breakfast; reactions were also frequent in the late morning and the late afternoon. In the patients who were given both rapid acting clear insulin (regular or crystalline) and protamine insulin before breakfast, the most common times of reaction were the forenoon, the period between midnight and breakfast, and the late afternoon, in that order.

This is another feature of hypoglycemia in which patients should be thoroughly instructed. Then they have two parts of the puzzle—symptoms and time—which, if they fit, make the diagnosis more certain. The patient who is properly taught and who experiences symptoms of a reaction thirty minutes after a meal is apt to question his diagnosis. It is possible for a reaction to occur at this time, but probably only after exercise or with a gastrointestinal disorder, perhaps diarrhea, in which absorption may be inadequate.

What are the dangers of hypoglycemia if promptly treated?

From this series, it would appear that there is no danger, but such is not quite the case. Perhaps the greatest danger is that of injury resulting from the hyperexcitable or manic state which some patients exhibit. Occasionally an insulin reaction may result in an arrest for drunkenness. Herein lies a great danger for the diabetic who drinks—even moderately—, for if alcohol is noted on his breath when he has a reaction a disagreeable incident may result.

What are the dangers of hypoglycemia if not promptly treated?

There was only one case in this group which was not treated promptly. This patient was a 61 year old Negro woman whose diabetes was discovered while she was in coma. Treatment with 600 units of insulin brought her out of coma, but resulted in profound hypoglycemia which lasted for six hours before treatment was given. When treatment was instituted, the patient was unconscious, and she remained so for an additional six hours despite 150 Gm. of intravenous glucose. After regaining consciousness the patient was somewhat stuporous and had a motor aphasia which lasted for several days. There were no additional neurologic signs, and the patient recovered completely without sequelae. The greatest danger in this regard is the administration of insulin to a patient already suffering from hypoglycemia.

As a result of extensive work in the psychiatric clinics on insulin hypoglycemia, much has been learned about changes in the brain cells following such treatment. Sahs and Alexander⁽³⁾ reported a case in which the patient died of insulin hypoglycemia. They summarized the pathologic changes as follows:

"Irregular dilatation of intracerebral vessels, indicating various degrees of sluggish flow; multiple thrombi and perivascular extravasations, notably in the basal ganglia and medulla oblongata, but involving other areas as well; foci of blanching in the central and upper parietal regions of the cortex, and interstitial edema with swelling of oligodendroglia cells in the cerebral white matter. Evidence is present to support the anoxic theory of hypoglycemic shock."

In general, examination of brain tissue has shown edema and hyperemia with small

cerebral thromboses and hemorrhages but no major vascular change. In addition, widespread cellular disintegration has been reported.

What are the dangers of insulin hypoglycemia in patients with pre-existing vascular disease of the heart and brain?

No untoward accidents occurred in this group despite the fact that many patients had severe vascular disease. Much has been written about the danger of hypoglycemia in patients with coronary artery disease, and cases have been cited to illustrate this point. Certain patients in this group had severe angina pectoris, and a few of those who were observed in proved hypoglycemia had no angina at the time. One 59 year old woman with diabetes of eighteen years' duration, who took about 60 units of insulin daily, had the typical Kimmelstiel-Wilson syndrome, with a blood pressure of 220 systolic, 140 diastolic, diabetic and hypertensive chorioretinopathy, hypertensive and arteriosclerotic heart disease with recurrent failure, hypoproteinemia, albuminuria, and nitrogen retention. During a period of vomiting which lasted for two weeks, this patient had hypoglycemia almost daily and experienced no angina at the time of hypoglycemia. When anginal attacks occurred on other occasions, blood sugars were normal or above normal.

Levine⁽⁴⁾ stated that, since the work of the heart may be increased by as much as 20 per cent following hypoglycemia, insulin should be avoided as much as possible in coronary thrombosis. He also stated that he had seen rupture of the ventricular wall occur thirty minutes following the injection of 10 units of insulin. The blood sugar level in this case was not reported, however. If hypoglycemia was present at the time of ventricular rupture, then it is likely that it was already present before the insulin was given, in which case the insulin was contraindicated. If hypoglycemia was not present at the time insulin was given, then it is hardly probable that 10 units of insulin produced a low blood sugar in thirty minutes. Levine's point is well taken, however, that patients with diabetes and coronary artery disease should be treated cautiously with insulin. Patients with severe diabetes, of course, will require insulin no matter what

3. Sahs, A. L., and Alexander, L.: Fatal Hypoglycemia: Clinicopathologic Study. Arch. Neurol. & Psychiat. 42: 286-297 (Aug.) 1939.

4. Levine, S. A.: Clinical Heart Disease, ed. 3. Philadelphia and London, W. B. Saunders Co., 1945, p. 122.

disease is present. In properly treated patients with mild diabetes who require insulin, the insulin dosage is so small that hypoglycemia should not be a problem. Furthermore, the counter-regulatory secretion of adrenalin which occurs in hypoglycemia, though increasing the work of the heart, would also produce coronary artery dilatation.

Arteriosclerosis is a metabolic disorder, and where a situation exists that predisposes to arteriosclerosis—diabetes, for example—then everything possible ought to be done to prevent its progression. Therefore, if the diabetes requires it, insulin should be used judiciously, but without hesitation. Coronary thrombosis is much more common in diabetic than in non-diabetic persons; yet the simultaneous occurrence of coronary thrombosis and hypoglycemia in the diabetic is rarely observed. Such an event would be expected to occur occasionally on the basis of coincidence.

The incidence of cerebral vascular accidents is no higher in diabetic than in non-diabetic patients⁽⁵⁾. However, the concomitant occurrence of cerebral vascular accidents and hypoglycemia has been reported in several cases, as well as hypoglycemia simulating a cerebral vascular accident⁽⁶⁾. Where focal vascular lesions exist in the brain, it seems likely that in the event of hypoglycemia the greatest cellular change would occur at the site of poor circulation. It is suggested that the Jacksonian seizures observed in patients having an insulin reaction are on the basis of a pre-existing focal arterial change in the brain.

Are there any atypical signs and symptoms of insulin reaction?

A few cases in this series seem worthy of discussion. One patient, a 28 year old woman with diabetes of nine years duration, was discharged from the hospital following delivery of her baby before her insulin dosage of 20 units of regular and 40 units of protamine zinc insulin had been reduced to the pre-pregnancy level of 30 units of protamine zinc insulin. One week following discharge and for several days following, partial right sided paralysis developed at 11 a.m. and lasted until lunch time. On the fourth day

when this patient was seen at 11 a.m., she had a typical right hemiplegia with positive Hoffman and Babinski signs. The blood sugar level was found to be 52 mg. per 100 cc. Following the ingestion of carbohydrate by mouth the patient was perfectly normal in twenty minutes. She had none of the other symptoms or signs of hypoglycemia. After her insulin dosage was adjusted, she had no such manifestation again.

In one patient, a man aged 42, generalized urticaria developed with hypoglycemia. This was initially relieved by intravenous glucose, and when it recurred later by carbohydrate given orally.

A 55 year old woman with diabetes of twenty-four years' duration had profound hypoglycemia without prodromal signs. At times, she was revived from a comatose state by intravenous glucose. On no occasion had she been cognizant of the early symptoms of reaction. Only 30 to 35 units of protamine zinc insulin were required for control of her diabetes. When the insulin was reduced by as much as 2 to 4 units, hyperglycemia occurred promptly. Her diabetes was finally controlled without reactions by prescribing interim feedings and a late bedtime feeding.

This condition has been observed in several patients with diabetes of long duration. Perhaps they have some degree of cerebral arteriosclerosis with cortical damage which has suppressed cortical reception.

What is the best form of treatment?

We have all seen marked glycosuria and hyperglycemia in patients who have taken too much carbohydrate for an insulin reaction. It would seem better to train patients to correct hypoglycemia with as little carbohydrate as possible. Often a soda cracker or half an orange will suffice, and can be repeated if necessary. A greater problem is that of the unconscious patient. It is rather surprising how often a patient who is apparently unconscious can be made to swallow orange juice. If this can be done, it is the preferable method. If not, 10 to 20 cc. of 50 per cent glucose given intravenously will usually be sufficient.

For profoundly hypoglycemic coma, continuous intravenous glucose should be given until the patient is conscious. This principle is supported by the data of Pijoan and Gibson⁽⁷⁾, who showed that four minutes follow-

5. Joslin, E. P., Root, H. F., White, P., Marble, A., and Bailey, C.: Treatment of Diabetes Mellitus, ed. 8, Philadelphia, Lea and Febiger, 1916, p. 573.

6. Root, H. F., and Styron, C. W.: Insulin Hypoglycemia and Vascular Accidents in Diabetes Mellitus, J. Mt. Sinai Hosp. 8:953-964 (Jan.-Feb.) 1942.

7. Pijoan, M. and Gibson, J. G., Jr.: The Rate of Disappearance of Intravenously Administered Dextrose in the Human Subject, Am. J. Physiol. 121:534-536 (Feb.) 1938.

ing the intravenous injection of 25 Gm. of glucose, 87.5 per cent was removed from the circulating plasma. Other agents are useful in reactions occurring a few hours after meals⁽⁸⁾. Adrenalin mobilizes available glycogen, and the injection of 1 cc. of a 1:1,000 solution may overcome the reaction. Pituitary extract is also helpful.

The longer hypoglycemia has existed, the slower the response to treatment. As much as 200 Gm. of glucose may be necessary for the patient with long standing hypoglycemic coma before the blood sugar will begin to rise. Among the supportive measures which may be necessary in the treatment of the patient with long standing hypoglycemic coma are oxygen for the cyanotic patient, suction to remove aspirated mucus or food, intubation to insure a good airway, and even whole blood for the effect of the respiratory enzymes it contains. In case of convulsions sodium pentothal or sodium phenobarbital may be used.

Summary

Data on 175 cases of insulin hypoglycemia occurring in 90 patients are given. The signs and symptoms, the common times of reactions, the unusual manifestations, the dangers in patients with and without pre-existing vascular disease, and methods of treatment are all discussed in detail.

Discussion

Dr. E. D. Peasley (Asheville): The pathologist seldom sees these cases unless the treatment is ineffective. The pathologic changes produced by insulin shock are very limited, and ordinarily we do not expect such changes unless there has been a prolonged state of hypoglycemia.

I recently performed an autopsy on a patient who had died as a result of insulin treatment instituted for mental disease. The patient was a young man who had had previous insulin shock treatments. An acute pulmonary edema developed during treatment. The patient did not respond to intravenous glucose, and died in a short time.

This case demonstrated as well as any the essential pathology of insulin shock. The most pronounced findings were those of pulmonary edema. His lungs were, I think, the wettest I have ever seen. Generalized congestion of all his organs was present, but the primary cause of death was pulmonary edema, which we regard as the result of insulin shock.

Prolonged hypoglycemia will produce changes in the cerebral structure resulting from edema and hemorrhage, usually relatively minute; and it is those changes which bring about the very marked variation in the clinical features. The neurologic manifestations are often the most pronounced, and they vary tremendously.

It has been shown that quite a few cases of hypoglycemia go unrecognized. This paper, of course,

is on insulin hypoglycemia; but spontaneous hypoglycemia may give bizarre and varied symptoms. Frequently such cases are diagnosed as psychoneurosis or some other functional disease. I think it is extremely important to do blood sugar tests on all new patients, to be sure that hypoglycemia is not a factor in their symptoms. One possible cause of spontaneous hypoglycemia is a tumor of the islands of Langerhans.

There was recently reported at one of our staff meetings the case of a man who had had insulin prescribed on the basis of glycosuria alone. I think we all recognize that it is a mistake to give insulin to a patient without blood sugar determinations. This man, not needing insulin, went into hypoglycemic coma, which was prolonged sufficiently to produce symptoms of cerebral irritation. It was thought that he might have had a cerebral accident, and it was not until after he recovered spontaneously that we were able to establish the fact that he had had insulin without having a blood sugar determination.

One condition which occurs primarily in infancy produces hypoglycemia. It is caused by an error of sugar metabolism in which the glycogen is stored in the liver—von Gierke's disease. It produces acidosis but not the other symptoms we find in diabetes.

EXPERIENCES OF THE GREENSBORO TUMOR CLINIC

F. K. HARDER, M.D.

Health Officer

GREENSBORO

Paradoxically, the problem of cancer is being increased by progress in preventive medicine. Large numbers of people who have been spared the infections that once decimated younger populations are now living on into the age groups when cancer is most frequent. The present increase in cancer is apparent rather than real—a consequence of the survival of more people to middle and old age. Age-specific death rates from cancer have shown a small but significant decline during the last ten years⁽¹⁾. In spite of the inadequacy of present methods of treatment, it is estimated that one out of four patients with cancer is now saved by treatment, and that an additional one could be saved by more prompt and adequate use of present methods of therapy.

Community effort to control a disease is usually contingent upon recognition that a state of emergency exists. Although the ravages of cancer are less spectacular than

Read before the Section on Public Health and Education, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

1. (a) Potter, E. A., and Tully, M. R.: The Statistical Approach to the Cancer Problem in Massachusetts. *Am. J. Pub. Health* 35:485-496 (May) 1945. (b) Recent Gains in Cancer. *Statistical Bulletin*, Metropolitan Life Insurance Company, 28:1-4 (Feb.) 1947

those of some of the epidemics treated in the classical age of public health, increasing public awareness of this disease is bringing more and more organized community and professional attention to bear upon it.

The concept of the present-day tumor clinic is no more than twenty-five years old. Greensboro had one of the first community tumor clinics, and the first in the state to meet the standards of the American College of Surgeons. Few clinics were in operation ten years ago, when the Greensboro Clinic was started. Its sponsorship, initiation, and staff came from the Guilford County Medical Society. Nursing service was provided by the Greensboro Health Department. The clinic was quartered first in a small outpatient building of one of the local hospitals, and subsequently in space rented by the Greensboro Health Department primarily for maternity and infancy clinics. Social service and clerical service were furnished by the Greensboro Medical and Hospitalization Fund, an agency of the Community Chest primarily designed to pay for the hospital care of people with low incomes who were ineligible for assistance from the Department of Public Welfare. The local chapter of the American Cancer Society has helped in purchasing equipment and in paying some of the bills for treatment. I have been associated with the clinic for five years, but, except for a small contribution of personal service, I make no claim to credit for the success or failure of the project.

Sufficient time has elapsed to permit the formulation of opinions concerning some of the administrative aspects of a tumor clinic. Attempt is made here to consider neither research possibilities nor technical details of diagnosis and treatment. The purpose is to relate significant experiences of the Greensboro Tumor Clinic in following the standards of the American College of Surgeons. Details concerning the administration of a tumor clinic are available in the excellent publications of the American College of Surgeons.

Name of Clinic

"Tumor clinic" seems to be the best choice. The use of the word "cancer" in the name of the clinic is psychologically unsound, and many malignant tumors other than cancers will be seen. The American College of Surgeons employs the word "cancer" freely in its technical literature, but the word "tumor"

should be substituted in dealing with the public.

The Clinic as an Agent in Community Education

The community nature of the tumor clinic permits it to function as a source of local information and news releases in a way which medical ethics will not allow for the individual physician. Newspapers and the radio are eager to use stories and reports from the tumor clinic. Such releases may be nuclei for an infinite number of educational items concerning the importance of early diagnosis and treatment. The clinic is an excellent center for filing pamphlets and literature to be used by speakers, students, and civic associations. The clinic staff serves as a panel of speakers for civic organizations and radio programs.

The Clinic as a Source of Postgraduate Medical Education

Recent publications⁽²⁾ indicate that the medical profession has lagged behind the public in reducing delay in the diagnosis and treatment of cancer. A term of service at a tumor clinic is of great help in raising the physician's index of suspicion for cancer. He may see more malignant tumors at one clinic session than he would in a year of practice. An attempt should be made to rotate the service widely through the membership of the medical society, because there are few physicians who will not benefit from the experience. Only continuous postgraduate training, formal or self-acquired, is going to produce and maintain well rounded skill.

All of the types of specialists listed by the American College of Surgeons are available in Greensboro, but not all have attended the clinic sessions. The availability of a pathologist is absolutely essential, and any community which has a pathologist usually has the other specialists or men with special interests.

The precedents now being established in relatively new tumor clinics will set policy for many years to come. Narrow points of view and rigid compartmentalization should be avoided if the maximum contribution to the health of the community is to be made. The general practitioner receives scant recognition in tumor clinic standards, and is in danger of being excluded.

2. Leach, J. E., and Robbins, G. F.: Delay in the Diagnosis of Cancer, J.A.M.A. 135:5-8 (Sept. 6) 1947.

Types of Service Rendered by a Tumor Clinic

The American College of Surgeons has set up definite standards for cancer clinics, cancer diagnostic clinics, and cancer detection centers. The purpose of the cancer clinic is complete diagnosis and treatment; that of the cancer diagnostic clinic, complete diagnosis; and that of the cancer detection center, screening. The dividing line between diagnosis and detection is tenuous, although the basis of detection is recognition of the possibilities inherent in mass programs in which attention is concentrated on readily accessible parts of the body where cancer is likely to develop—the skin, mouth, breasts, rectum, and genitalia.

Only a very large population justifies a full-fledged cancer clinic with treatment facilities. Attendance at the Greensboro Clinic has not at any time been nearly large enough to justify treatment facilities, and the resources of hospitals and specialists have been used for treatment. The Greensboro Clinic has been diagnostic in its intent, but an element of detection has frequently entered.

Selection and Handling of Patients

The policy in Greensboro has been to accept anyone referred by a physician, and also any self-referred individual not under the care of a physician. In spite of the inclusiveness of this policy, most of the patients have been in the indigent and low-income groups. In ten years of operation the Greensboro clinic served 602 patients, 72 of whom had cancer of one type or another. During the same period of time more than 500 people in Greensboro died of cancer, and an unknown number developed the disease.

Treatment is paid for by the patient, or through public or private welfare channels when the patient is unable to pay. Patients with vague medical, gynecologic, or psychiatric complaints are often referred to the clinic by physicians or by themselves. Such trifling complaints may irk volunteer medical attendants conditioned to be interested in advanced pathologic changes, but they are evidence that the campaign to make the public and the profession cancer conscious is succeeding.

A report of the findings at the clinic is mailed to the referring physician or family physician, and the patient is sent to him for follow-up studies and treatment.

Schedule of Clinics

One clinic a week is enough to provide good service. Only a large center could use more frequent sessions. We have not yet had experience with two clinics a month, but we have found that a monthly schedule is definitely unsatisfactory. It is inconsistent to educate patients in promptness to use facilities available only at intervals of four to five weeks.

Before World War II, the Greensboro Tumor Clinic was a flourishing organization that met once a week. During the war attendance of patients and physicians fell off so much that sessions were cut to once a month on the theory that attendance at individual clinics would be four times as great. Instead, it fell still more until the only justification for keeping the clinic open was that many of its most enthusiastic sponsors were in military service and it seemed desirable to maintain an organization until they could decide to expand or terminate it. With the greater interest now prevailing, attendance has picked up significantly and we expect soon to return to a more frequent schedule—perhaps every week, perhaps twice a month.

In sparsely settled areas the choice must be made between frequent clinics remote from many of the patients and less frequent clinics brought closer to them. Experience in Greensboro indicates that the former choice will be better, for delay kills interest more surely than distance.

Finances of the Clinic

In Greensboro the policy is to take all comers, regardless of financial status, without charge. The philosophy is that diagnosis contains an element of prevention and that free prevention is not immoral. Treatment is provided through individual arrangements or established welfare channels. Since the services of the staff are donated, the cost of the clinic is practically *nil*, and no one is out anything except a little time. The American College of Surgeons advises charges to all. Financial policies in tumor clinics may be expected to vary as widely as the social and economic philosophies prevailing in different communities.

Summary and Conclusion

There is no magic formula for solving the cancer problem. Time-consuming (to the technician) cytologic tests and quick screen-

ing methods, largely to be developed, touch only upon phases of the subject in one or sometimes both sexes. The annual physical examination on a community basis is a dream that would be relatively ineffective if attainable, because a year allows ample time for minimal cancer to become hopelessly advanced. Pending results of further research, the only approach promising immediate returns is through continuous education and propaganda concerning the necessity for early diagnosis and treatment. For this approach to be most effective, better facilities for diagnosis and treatment must be made available. The tumor clinic as constituted at present reaches a small segment of the population.

The Greensboro Tumor Clinic has established itself as a worthwhile enterprise, but must develop and expand before it can make a large contribution toward the control of cancer. An oncologic service represents a desirable trend in specialization, but its approach must be psychosomatic, and the general practitioner should not be excluded from its staff.

Discussion

Dr. M. B. Bethel (Charlotte): In our clinic in Charlotte, we have noticed that the attendance varies almost exactly with the publicity. I doubt if we in organized public health work make as much of a contribution along this line as we should.

I envied Dr. Harder when he mentioned that the clinic in Greensboro is free. We are at the extreme opposite end of the scale in Charlotte. I believe Greensboro is ahead of us at this point.

PENTOTHAL SODIUM, NITROUS OXIDE-OXYGEN, CURARE ANESTHESIA

JOHN C. MONTGOMERY, M.D.*

CHARLOTTE

The most important recent advance in the field of anesthesia is the ability of the anesthesiologist to select several drugs and combine them so that each is used to produce the effect for which it is best suited. The purpose of this paper is to discuss briefly three drugs which may be so combined. These are Pentothal Sodium, nitrous oxide-oxygen, and curare.

Pentothal Sodium

When Pentothal was introduced into anes-

thetia, it appeared that the long awaited ideal anesthetic agent had arrived. With increasing use of the drug, however, limitations appeared. It was found that adequate surgical anesthesia could not always be obtained with safety by this agent alone. Pentothal in the ordinary sleep-producing dose does not block pain pathways nor produce muscular relaxation. Large doses (3-4 Gm.) are sometimes necessary to produce such effects. These large doses also depress the cerebrum and medulla. Lundy has emphasized for years that the effect of Pentothal Sodium in such doses is not that of a short-acting barbiturate. Respiratory distress is the most common effect of this depression. Prolonged sleep and delirium may be seen during the recovery period.

Nitrous Oxide

Nitrous oxide is a weak anesthetic but a good analgesic agent. The addition of nitrous oxide-oxygen analgesia to that of the Pentothal reduces the total amount of Pentothal necessary. Surgery of many hours' duration can be done under this combination without the use of depressing amounts of Pentothal. A mixture containing approximately 70 per cent nitrous oxide and 30 per cent oxygen is my preference.

Curare

The addition of nitrous oxide to the Pentothal anesthesia frequently fails to produce sufficient muscular relaxation for abdominal surgery. Neither Pentothal nor nitrous oxide controls reflexes and abolishes muscle tone. The addition of cyclopropane or ether will give relaxation with less cerebral depression than is produced by large doses of Pentothal. Cyclopropane or ether, however, introduces the hazard of inflammability and also increases the depth of anesthesia. Curare intravenously will give the desired muscular relaxation without increasing the depth of the general anesthesia. Curare produces relaxation of muscle chiefly by its action on the peripheral rather than the central nervous system.

Curare is not an anesthetic drug, although Whitacre and Fisher⁽¹⁾ report that unconsciousness follows the administration of large doses in the unanesthetized patient. Its principal action is the relaxation of muscle by

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 4, 1948.

* Director of Anesthesiology, Charlotte Memorial Hospital, Charlotte, North Carolina.

1. Whitacre, R. J. and Fisher, A. J.: Clinical Observations on the Use of Curare in Anesthesia. *Anesthesiology* 6: 124-130 (Mar.) 1915.

interruption of the efferent impulses. Claude Bernard⁽²⁾ showed that this effect takes place at the myoneural junction. The relaxation is such that the muscle will not respond to normal stimulation of the nerve or to the injection of acetylcholine.

Curare was introduced to the civilized world in 1595 by Sir Walter Raleigh. He brought it back from South America, where it was used by the natives as an arrow poison. Richard Gill⁽³⁾, author, explorer and naturalist, is responsible for finding and procuring the particular plant in sufficient quantities for commercial use. E. R. Squibb and Company purified the product. The drug is available under the names of Intocostrin and D-tubocurarine. Intocostrin contains 20 mg. of the active principle per cubic centimeter. D-tubocurarine contains 3 mg. to the cubic centimeter. Since both contain 20 units per cubic centimeter, the dose by volume is the same. The effect of the two is also the same.

Bennett⁽⁴⁾ popularized the use of curare to control the convulsions associated with Metrazol or electric shock therapy. In 1942 Griffith and Johnson⁽⁵⁾ first gave curare to produce muscular relaxation during anesthesia, using it in combination with cyclopropane. Its use has spread rapidly.

Curare affects first the muscles of the head, neck, and throat. In the unanesthetized patient a choking sensation is felt, and the patient is unable to swallow. Relaxation of the muscles of the trunk and extremities follows. Paralysis of the muscles of the thorax and diaphragm is the effect of overdosage. Curare produces a flaccid paralysis of the abdominal muscles, with complete relaxation. The drug has no effect on heart muscle.

Technique of Administration

The technique of administration is simple. A venoclysis of saline or glucose is started. By means of a three-way stopcock Pentothal or Intocostrin can be given as desired. Intocostrin causes Pentothal to be precipitated

from the solution. For this reason, the Pentothal should be washed from the tubing before the curare is given. The amount of each drug given initially varies with different anesthetists. Knight⁽⁶⁾ of Minneapolis gives 1 cc. of Intocostrin to each 2 cc. of a 2.5 per cent solution of Pentothal. This technique has not been satisfactory in our hands.

I feel that the Pentothal is the primary anesthetic agent. Curare is added only when and if needed. With a few exceptions, we have used curare for abdominal surgery only. Anesthesia is begun with Pentothal, and nitrous oxide is started by the semi-closed method as soon as the patient is asleep. If relaxation does not seem adequate by the time the patient is draped, 40-60 units of Intocostrin is given. Relaxation follows in two to three minutes, lasting about forty minutes. Additional smaller amounts of curare are added as needed.

Results

We started using this combination at the Charlotte Memorial Hospital in August, 1946, employing curare only when relaxation was desired. Through March 31, 1948, this combination of Pentothal Sodium, nitrous oxide, and Intocostrin had been given to 393 patients. The ages of the patients varied from 12 to 80, the dose of curare from 30 to 200 units. The types of operations are as follows:

Abdominal gynecologic surgery.....	141
Appendectomy	76
Biliary surgery	53
Herniorrhaphies	29
Renal or ureteral surgery	27
Abdominal explorations	24
Intestinal resections	19
Gastric resections	16
Laminectomy	4
Sympathectomy	4
TOTAL	393

Adequate muscular relaxation is necessary in such procedures. The degree of muscular relaxation obtained with curare compares favorably with that produced by ether or spinal anesthesia. In only one case (reported below) did any serious anesthetic complication occur on the table. There were no post-operative complications or deaths in this series that could be attributed to anesthesia.

- Bernard, C. and Pelouze, T. J.: Recherches sur le curare. *Compt. rend. Acad. d. sc.* 31:533-571, 1850; and Bernard, C.: Leçons sur les effets des substances toxiques et médicamenteuses, Paris, J.-B. Baillière et fils, 1857, p. 238.
- Gill, R. C. G.: *White Water and Black Magic*, New York, Henry Holt & Co., 1940.
- Bennett, A. E.: Preventing Traumatic Complications in Convulsive Shock Therapy by Curare, *J.A.M.A.* 114:322-324 (Jan. 27) 1940.
- Griffith, H. R., and Johnson, G. E.: The Use of Curare in General Anesthesia, *Anesthesiology* 3:418-420 (July) 1942.

- Knight, R. T.: Combined Use of Sodium Pentothal, Intocostrin (Curare), and Nitrous Oxide, *Canad. M. A. J.* 55: 356-360 (Oct.) 1946.

Apnea was not infrequent, but never so severe that adequate ventilation could not be maintained by intermittent pressure on the breathing bag. Prostigmine was not given.

Advantages and Dangers

This type of anesthesia has several advantages. Induction is quick and pleasant. Post-anesthetic nausea is infrequent. The hazard of fire or explosion is absent. The only contraindication to its use is the inability of the anesthetist to give proper pulmonary ventilation if the need should arise.

The administration of this combination is so simple that its dangers are apt to be overlooked or disregarded. These agents are capable of making a patient completely paralyzed and unconscious in a few minutes. Such drugs should be handled with respect. The following case report emphasizes the truth of that statement.

A white female, aged 50, was scheduled for a hysterectomy. The past history and physical examination were negative except for a history of anterior poliomyelitis 25 years ago, and residual weakness of one arm and leg. Induction with Pentothal was uneventful, and nitrous oxide was started. While the patient was being draped, 40 units of Intocostin was given intravenously. Two minutes later the patient became cyanotic and breathed with great difficulty. Manual pressure on the breathing bag gave no relief. A no. 29 Magill endotracheal tube was inserted with some difficulty. This did not relieve the inspiratory dyspnea, but pressure on the bag cleared up the cyanosis. Apparently the patient had some form of bronchospasm. A small amount of ether was mixed with the oxygen, but gave no relief. After thirty minutes the operation was cancelled. One hundred per cent oxygen was given for another half hour, until respiration was normal. The intratracheal catheter was removed and the patient returned to her room. Recovery was uneventful. Four days later, under spinal anesthesia, the hysterectomy was performed.

I have no explanation for this occurrence. The doses of Pentothal and curare were small. I feel certain, however, that if we had not been able to force 100 per cent oxygen into her lungs the patient would have died.

The combination of Pentothal and curare produces two effects that endanger the safety of the patient unless the anesthetist is always aware of their presence: (1) *respiratory depression*, and (2) *absence of the common signs of the depth of anesthesia*.

Depression of respiration is the greatest disadvantage of this type of anesthesia. In recent years anesthetists have shown a tendency to make light of periods of apnea occurring during anesthesia. With tracheal intubation and improved methods of resuscita-

tion the danger from apnea is not as great as formerly. Apnea is not a physiologic condition, however, and it should be avoided except in some instances when an immobile diaphragm is desired.

Prior to operation patients receive several drugs, each of which has some depressing effect upon respiration. A barbiturate, followed later by morphine with atropine or scopolamine, is the usual preoperative medication. These are mild respiratory depressants. Pentothal is a strong one. It depresses by direct action on the respiratory center. Curare depresses the peripheral respiratory mechanism by its action on intercostal muscles. Between these two drugs respiration can be stopped by either central or peripheral action. With these facts in mind, I believe that Pentothal should be given slowly. Let the patient receive its full effect before the curare is given. It was our experience that if this practice was followed, the curare was often not needed. I prefer frequent injections of small amounts of each drug to infrequent large ones. You can always add but never withdraw the drugs.

Respiration is a dual function. We all appreciate the patient's need for oxygen; often his need to eliminate carbon dioxide is forgotten. Respiration, to be efficient, must do both. With the shallow respiration seen with Pentothal and curare, retention of carbon dioxide is not uncommon. This causes an elevation of blood pressure that may mask the patient's true condition. Increasing the depth of respiration by intermittent pressure on the breathing bag will prevent the accumulation of carbon dioxide in the patient.

Curare obscures or eliminates many of the signs of the depth of anesthesia. These depend on muscle action. Contraction or dilatation of the pupil, motion of the eyeball, and so forth, are all muscular actions. Curare paralyzes the muscles and hence destroys the anesthesia signs they produce. It is very difficult to know accurately the plane of anesthesia in a patient under the influence of curare. For this reason I prefer to have the Pentothal anesthesia established before giving curare.

Conclusion

This type of anesthesia is not perfect; with recognition of the two effects just mentioned, however, it is a safe method. We are finding it more and more satisfactory.

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DR. JOSIAH TRENT—APOSTLE OF COURAGE

Just as the JOURNAL was going to press, news came of the death of Dr. Josiah C. Trent on December 10. Although Dr. Trent had been on the editorial board of the NORTH CAROLINA MEDICAL JOURNAL for only two years, no member of the board was more valuable than he. Before he became officially connected with the JOURNAL, he inaugurated the "Thumbnail Sketches of Eminent Physicians," which from the beginning won wide acclaim.

Dr. Trent's life is a lesson in courage. Nearly seven years ago he learned that he had a rapidly growing type of lymphosarcoma. He knew that it would eventually be fatal, but continued his medical career and his social and domestic life just as if he had his full life expectancy ahead. By ability and hard work he won his way to recognition as

head of the Division of Thoracic Surgery in the Duke Medical School and Hospital. He worked to the very last, and not even his most intimate friends ever heard him complain.

Although Dr. Trent was only 34 years old when the end came, he had lived a rich and a full life. While he was still a student, he married a fellow student, Miss Mary Duke Biddle. To them were born four children. Mrs. Trent deserves special mention for heroism. She sympathized fully with her husband's desire to lead a normal life, and helped him carry on to the end. No one who saw them together at any gathering could have told that he had been mortally stricken. She shared his enthusiasm in accumulating one of the finest collections of rare medical books in this country.

Joe Trent will be greatly missed in many ways. He combined in ideal balance scholarship, professional ability and enthusiasm, and personal charm. He was an apostle of courage to all of his colleagues and friends.

The beautiful poem which Hans Zinsser wrote while himself facing certain death has been used before in this journal, but it is so singularly appropriate for Dr. Josiah Trent that it is again quoted:

Now is death merciful. He calls me hence
Gently, with friendly soothing of my fears
Of ugly age and feeble impotence
And cruel disintegration of slow years.
Nor does he leap upon me unaware
Like some wild beast that hungers for its prey
But gives me kindly warning to prepare:
Before I go, to kiss your tears away.⁽¹⁾

1. Reprinted by permission of Alfred A. Knopf, Inc., from Zinsser, Hans: *As I Remember Him*, Boston, Little, Brown & Company, 1940, p. 141.

* * * *

MEDICINE'S PUBLIC RELATIONS

A letter recently received from a North Carolina doctor in private practice posed a question that is hard to answer. He enclosed a feature article from the London correspondent of the *Greensboro Daily News*, entitled "Britons Like New Medical Plan." The doctor commented that the article "was read and mentioned by more people than all the exhaustive leaflets kept on my reception room tables." Then he asked, "Why can't we get frequent news articles in the papers that will be read by more people? Articles written by correspondents and not by A.M.A. officials nor by a front line committee, nor by a 'prejudiced' doctor."

As a matter of fact, articles and editorials favorable to the medical profession do appear fairly often in the papers. For example, the *Twin City Sentinel* for December 1 carried in a prominent place on the editorial page an article under a two-column headline, "Nothing Is Free." This article, a scathing denunciation of British National Health Insurance, was furnished the *Sentinel* by Mr. Henry E. Fries, and was originally published in a railroad magazine. Certainly it was not inspired by an A.M.A. official, a front line committee, nor a doctor. Judicious suggestions to newspapermen can result in hundreds of similar articles in newspapers all over the land.

This doctor's letter, however, emphasizes the tremendous need of the medical profession of our country for better public relations. Thanks to the vision of the late Dr. I. H. Manning, the North Carolina Medical Society had one of the first public relations committees in the country. Under the able chairmanship of Dr. Donald Koonce this committee is being rejuvenated. A number of other states have public relations committees, many of them spending large sums of money in an effort to build up good will. The American Medical Association has recently added a public relations department, and on November 27 sponsored the first National Public Relations Conference in St. Louis.

What has happened to the vast reservoir of good will that the medical profession has had in the past? Why have the people begun to question the integrity of doctors, individually and collectively? Every good clinician, when he finds his treatment of a case is not successful, begins to look for mistakes he may have made. Just so, the medical profession should search for its errors and try to correct them.

Our principal sins have been those of omission: the failure of individual doctors to answer calls as promptly as possible, to take night calls, or even to show enough interest in a sick patient to suggest other medical men who might be willing to make unwanted calls; and the failure of the medical profession to supply doctors for rural areas. Most of these sins of omission can be charged to the artificial shortage of medical manpower created by the excessive demands of the armed services, plus the fact that a dis-

proportionately large number of doctors have preferred to be specialists rather than general practitioners. Among our sins of commission have been those of charging excessive fees and accepting rebates or "kick-backs."

These "sins" have been discussed at length in this and other journals. Many of the specific charges have been investigated and found to be without foundation; but that fact does not keep our critics from repeating them.

One major weakness of the medical profession is that so few of its members manifest any active interest in its problems, except to criticize those who do take the leadership in medical organizations. The vast majority are opposed to being regimented under political control, yet make no attempt to register their opposition. For years they indulged in the complacent thought that "It can't happen here"; now only too many are taking the defeatist attitude that "There isn't anything we can do about it."¹

As this journal has repeatedly pointed out, most of the propaganda designed to smear the medical profession has been paid for by tax money. Mr. Oscar Ewing is constantly blasting the American Medical Association and the National Physicians Committee for opposing his pet scheme to socialize the medical profession. He charges "the doctors' lobby" (doubtless the National Physicians Committee) with spending \$353,990 during the first nine months of 1948. Contrast this third of a million dollars with the \$75,000,000 that federal employees spent in 1946 for propaganda, much if not most of it on behalf of socialized medicine. The impact of this tremendous amount of tax money directed toward influencing public opinion has much to do with the large number of "articles in the papers" favoring compulsory health insurance. If, however, the rank and file of medical men in this country will take it upon themselves to give their patients and friends the arguments against government medicine, they can exert enough counterpressure to restore the confidence of the people in the medical profession as a whole. The people have never lost confidence in their individual family doctors.

1. Please read again the editorial, "Some Election Reflections," in the *NORTH CAROLINA MEDICAL JOURNAL* for November.

DR. PAUL McCAIN'S PORTRAIT UNVEILED

In a simple, impressive ceremony held at McCain, North Carolina, on December 7, the portrait of Dr. Paul McCain which was presented to the Sanatorium by the State Medical Society was unveiled. After a delicious luncheon in the dining room of the Sanatorium, addresses were made by Dr. Blomquist of the United States Public Health Service and Mr. Charles Cannon of Kannapolis, who described himself as the freshman member of the Board of Directors of the Sanatorium. The guests then moved to the lobby of the Main Building, where Dr. Paul Whitaker presided, and in a few well chosen words presented Justice Wiley Rutledge of the United States Supreme Court, who was once Dr. McCain's patient at the Sanatorium. After his heartfelt speech of tribute to Dr. McCain, the portrait was accepted by Dr. Paul Ringer, of Asheville. The addresses will be published in a later issue of the NORTH CAROLINA MEDICAL JOURNAL.

There were few dry eyes in the audience when Dr. McCain's little granddaughter pulled aside the curtains that had concealed a speaking likeness of the man whom all present delighted to honor. It may safely be said that few, if any, came to this ceremony from a sense of duty. Virtually everyone was there because he or she wanted to express affection and admiration for Paul McCain and for his wife.

* * * *

DR. W. L. PRESSLY—THE GENERAL PRACTITIONER OF THE YEAR

No one who knew him was surprised to learn that the second General Practitioner Award of the American Medical Association was given this year to Dr. W. L. (Buck) Pressly, of Due West, South Carolina. Last year at Cleveland, Dr. Pressly was the runner-up, when the first award was voted to Dr. A. C. Sudan of Colorado. This year, at the Interim Session in St. Louis, he received a clear majority of votes over the two other men who were nominated by the Board of Trustees for the final verdict of the House of Delegates.

Dr. Pressly represents the highest type of general practitioner. He is literally "a modern doctor of the old school." He was graduated in medicine from Emory University, and has practiced at Due West for thirty-two years. His alma mater, Erskine College, has given him the honorary degree of Doctor of Laws for "his great humanitarian works." He has been president of his county, district, and state medical associations, and since 1939 a member of the South Carolina State Board of Health.

Since North Carolina offered no candidate for this award, our state can feel no trace of envy over the great honor that has come to Dr. Pressly and, through him, to our neighboring state. Indeed, we can follow the good Scotch custom and claim kin with him for our State Medical Society, since he was a cousin of Dr. Paul McCain, and the two were intimate friends in childhood.

North Carolina's heartiest congratulations go to Dr. Pressly, to the South Carolina Medical Association, and to the House of Delegates of the American Medical Association for the good judgment they displayed in their selection.

* * * *

THE VITAL IMPORTANCE OF VITAL STATISTICS

In the "Correspondence" department of this issue will be found an important letter from Dr. J. W. R. Norton, State Health Officer. It is hardly necessary to emphasize the necessity for accurate records of births and deaths to the public health program of the state. North Carolina was one of the pioneer states in recognizing the importance of keeping vital statistics. It is humiliating to know that it has recently fallen near the bottom of the list in the completeness of birth and death registration.

As a result of the national interest aroused by our Medical Care Program, the eyes of the whole country are upon North Carolina. The doctors of the state should help to make its medical bookkeeping worthy of its medical progress in every other way.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF
WAKE FOREST COLLEGE

A 55 year old construction foreman was admitted to the North Carolina Baptist Hospital on September 17, 1948, complaining primarily of pain and swelling in the lower extremities and right arm, and with a history of cough for three months. The patient had had hypertension for about ten years, and for several years had noted mild edema of the ankles, which would appear during the day and disappear at night. This had caused him no great concern, and he had had no other remarkable cardiovascular symptoms. Three months before admission he began having a nonproductive cough which was interpreted as being an ordinary cold. About two months before admission the cough became so severe that it interfered with his work. He was admitted to a hospital, where he remained for five weeks. He was digitalized and treated with penicillin and streptomycin. An x-ray of his chest showed what was interpreted as virus pneumonia. His symptoms improved considerably while he was in that hospital, and the cough disappeared almost completely. He was observed to have some fever during his stay in the hospital.

Apparently before discharge he began to experience some pain in his lower extremities, particularly in the thighs. He probably had slight edema of the legs and ankles upon leaving that hospital, and on the day following his return home his right leg started swelling rapidly. The left soon began to swell in a similar fashion. This swelling was accompanied by considerable pain in the lower extremities, which was most marked over the outer aspect of the thighs. Increase in the temperature of the extremities was observed, and some erythema was noted over the lateral aspect of the thighs. Treatment with bed rest and ice packs resulted in considerable improvement. Questionable distention of the abdomen and orthopnea were present when the swelling of the lower extremities was at its peak.

Soon after the patient's return home from the hospital his cough returned and persisted in a mild degree until his admission here. Three days before admission to this hospital, some pain in the right antecubital space and

some swelling of the right forearm and hands were noted. These symptoms persisted until admission. The cough was non-productive except for a small amount of mucus, and there was no chest pain associated with it. A maintenance dose of digitalis was continued after his discharge from the hospital.

On admission to the North Carolina Baptist Hospital, physical examination showed the temperature to be 101.4 F., pulse 84, respiration 22, blood pressure 130 systolic and 80 diastolic in the left arm, with the patient recumbent. The patient appeared chronically ill but was alert and cooperative. He was slightly propped up in bed and showed evidence of slight respiratory distress. The skin was warm and dry, and a brawny type of edema was noted in the right lower extremity and left foot. Marked pitting edema was present in the left leg to the midtibial region, and in the right leg to the groin. The right arm showed a similar edema extending to the mid-humeral region, and the left hand showed a similar but less marked edema. There was questionable edema of the sacrum. A few shotty inguinal nodes were noted on the left.

No hemorrhages or exudate were noted on the optic fundi. Expansion of the lungs seemed to be symmetrical, but the breath sounds were diminished at the left base posteriorly and a few scattered rales were also heard in the lung fields. The heart was slightly enlarged to percussion, and there was slight tachycardia; snapping of the apical first sound was noted, but no murmurs were elicited. From time to time a gallop rhythm was observed. The liver edge was felt about 2 cm. below the costal margin; the spleen was not felt. No other abdominal masses and very little tenderness could be elicited. Neurologic examination was not remarkable.

Blood count showed a hemoglobin of 11 Gm., 3,880,000 red blood cells, and 10,600 white blood cells, with 78 per cent segmented polymorphonuclears, 8 per cent non-segmented, and 9 per cent lymphocytes. The sedimentation rate was 18 mm. Urinalysis showed clear, yellow urine, with a specific gravity of 1.010, an acid reaction, and no albumin or sugar. A rare white blood cell and a few epithelial cells were seen microscopically. Repeated urinalyses showed essentially the same findings, but a specific

gravity as high as 1.022 was observed. On September 23, 1948, a few bacteria were observed in the urine, and culture of the urine showed staphylococci. Blood culture showed no growth. The Kahn test was negative.

Phenolsulfonphthalein test showed a total excretion in two hours of 65 per cent. The nonprotein nitrogen on admission was 33 mg. per 100 cc., but after about one week it reached 90 mg. per 100 cc., where it stayed until the patient expired. The serum proteins were 5.5 Gm. per 100 cc.—albumin 3.6, globulin 1.9. The blood cholesterol was 204 mg. per 100 cc., bilirubin 0.7 mg. per 100 cc.; the blood sugar varied between 99 and 190 mg. per 100 cc. On the day following admission the prothrombin time was 19 seconds, against a control of 16.5. A bromsulfalein test showed 80 per cent retention in forty-five minutes, and a hippuric acid test showed an excretion of 0.37 Gm. The serum amylase on October 4 was 196 units.

An electrocardiogram made on the day after admission showed a definitely abnormal record which was interpreted as possibly being due to pericardial disease, generalized edema, or myocardial disease. There was questionable digitalis effect in the electrocardiogram. A repeat electrocardiogram with CF series I through VII, made on September 22, 1948, showed no significant change. Chest plate on the day following admission showed emphysema of the right lower lung fields, with non-specific pneumonitis of the left lower lung fields and moderate cardiac enlargement, plus a questionable mass at the right hilum. Another chest film made eleven days later showed some improvement in the emphysema of the right lower lung field, but the other aspects of the picture were essentially unchanged.

Bronchoscopy and pathologic study of bronchial secretions showed no evidence of carcinoma. Skin tests were done with tuberculin, histoplasmin and coccidioidin, and all were negative.

The patient received 1.3 Gm. of digitalis during the first three days in the hospital, and thereafter was maintained on 0.2 Gm. per day. He was also kept on a low salt diet and was given mercurial diuretics, with only fair diuresis. The patient ran a low grade fever most of the time until the last five days, when his temperature was within normal limits. Embolic phenomena were observed in the eyegrounds. After the first week in

the hospital the tachycardia was out of proportion to the patient's temperature. However, no frank pulmonary signs of congestive failure appeared until the last day, at which time many rales were heard.

The patient's course was steadily downhill, although there was thought to be some improvement in the edema of the right lower extremity from time to time, and on some occasions the swelling in the arms seemed to be decreased. The swelling in the left lower extremity, however, steadily progressed, and several days after admission the onset of gangrene in the left foot was noted. This was steadily progressive despite adequate dicumarol therapy and the use of papavarine and Priscol. Eventually, the onset of gangrene in the right foot was also observed.

The patient's hemoglobin fell to 7.7 Gm., and accordingly transfusions were given, which brought the value back to 11.3 Gm. He had considerable difficulty in voiding and had to be catheterized occasionally and treated with injections of Furmethide, to which he responded well. On September 26 the patient was seen by Dr. Garvey, who observed definite rigidity of both corpora cavernosa, with marked induration. It was felt that this was part of the picture of thrombophlebitis. The patient experienced a great deal of pain in the legs, particularly in the left leg. This was partially relieved by the use of ice packs, but also required a considerable amount of narcotics.

On the last day of life the patient had an episode of disorientation, apprehension, and sweating. This was thought to be due to an embolus, but it was not possible to tell whether it involved the lung, brain, or heart. He expired at 8 p.m. on October 6, 1948.

Discussion

DR. DAVID CAYER: Except for a history of hypertension of unknown severity over a period of ten years, accompanied by mild edema which disappeared overnight, this 56 year old man was apparently in good health until three months before his final hospital admission. At that time he began to have a nonproductive cough, followed by swelling of his extremities and right arm. The possibility that this swelling represents early evidence of congestive failure can be dismissed by the distribution of the edema and the presence of pain. Pain does not ordinarily accompany edema of the extremities due to congestive failure.

Throughout the onset of his symptoms the patient continued his work. At the time of his first hospital admission, five weeks before he was seen here, a film of the chest apparently showed some pulmonary infiltration and he was treated with penicillin and streptomycin. The symptomatic improvement at that time can, I believe, be attributed to bed rest. Even before his discharge from the hospital he again experienced pain in the lower extremities and edema of the legs and ankles, and began having fever. The increased temperature, erythema, pain, and swelling provide our classical description of inflammation—calor, rubor, dolor, and tumor. They also suggest the possibility that, during the treatment of his pulmonary complaint with bed rest and limitation of activity, the common complication of thrombophlebitis may have developed. It is of interest that, even with the patient at bed rest and with symptoms now directed chiefly to the extremities, orthopnea was present.

After the return of his cough and other symptoms resulted in his admission here, he developed the unusual complaint of pain in the right antecubital space, followed by swelling of the right forearm and hand.

The initial examination showed a fever of 101.4 F., a pulse rate of 84, and an increase in respirations to 22. The past history of hypertension was not confirmed, for the blood pressure in the nonedematous left arm was normal. The description of the brawny edema of the right lower extremity and left foot is more suggestive of obstruction than of the edema accompanying heart failure. It is significant that the edema was not confined to the most dependent portions of the body, such as the sacrum. Some comment as to the character of the second pulmonic sound would have been of interest, since the history from the onset suggests some primary pulmonary disturbance.

Except for a moderate anemia and a shift to the left in the differential white cell count, blood studies were not remarkable. Repeated urinalyses showed good concentration without abnormal findings. The total serum proteins were lowered, although the albumin of 3.6 mg. per 100 cc. eliminates the possibility of hypoproteinemia. The bromsulfalein test, showing 80 per cent retention after forty-five minutes, as well as the decrease in hippuric acid excretion, indicates marked hepatic damage. The blood amylase of 196 units

is in the upper limits of normal when it is considered that the value was found at the time the nonprotein nitrogen was reported as 90 mg. per 100 cc. The x-ray findings suggesting a mass at the right hilum, infiltration of the left lower lung field, and emphysema of the right lower lung field are of considerable importance.

The patient showed no response to the regimen ordinarily employed in the treatment of congestive failure and for the relief of impaired circulation of the extremities. The gangrene of both lower extremities was progressive, and following an episode of confusion, apprehension and disorientation the patient expired.

The distribution and type of edema, the absence of marked change in cardiac outline, the normal blood pressure, and the absence of murmurs, abnormal urinary findings, or eye-ground changes do not support the diagnosis of a primary cardiac or renal disturbance. In patients of this age group with evidences of impaired circulation, the possibility of degenerative disease such as extensive arteriosclerosis must be considered. As a rule, however, such persons give a previous history of impaired circulation and show widespread evidences of thickened peripheral vessels and impaired renal function, all of which were absent in this patient. In addition, gangrene, when it manifests itself as the result of arteriosclerosis, usually appears as small, well demarcated spots rather than as extensive gangrene of an extremity.

The possibility that we are dealing with a primary vascular disturbance, however, must be considered. This may be intrinsic and inflammatory, resulting from or complicating an infectious disease. The persistent pulmonary complaints and the previous diagnosis of virus pneumonia suggest such a possibility in this patient.

An inflammatory panarteritis such as periarteritis nodosa must also be considered. This disorder, however, is considered to be a streptococcal allergy, and we have no evidence of any such primary infection in this patient. In addition to being rare, periarteritis is usually accompanied by more systemic manifestations, including high fever, profound sweats, tachycardia, weakness, hypertension, and renal involvement, as well as lesions resembling erythema nodosum and often a marked eosinophilia. All of these are lacking in the patient being discussed.

The widely disseminated vascular phenomena suggest a migrating type of polyphlebitis. This may be deep or superficial, and is often accompanied by evidences of secondary arterial spasm. Although edema may appear rapidly, good collateral circulation remains and the lesions tend to disappear. Such disturbances may, however, precede a more serious disorder known as thromboangiitis obliterans, an inflammatory vascular disturbance involving veins, arteries, and nerves. Although this usually begins in the legs, it may involve the hands. The lack of systemic reaction would favor such a diagnosis. These patients usually give a history of exposure to cold or excessive use of tobacco, and a clear-cut history of intermittent claudication.

In the absence of these findings we must consider the possibility that the vascular disturbance may be extrinsic and represents a spread of tumor from a primary site to multiple secondary sites through the blood vessels. In favor of such a consideration are the low white cell count, the lack of marked systemic reaction, and the negative blood cultures. The symptoms of widespread metastatic tumor may be of short duration and of sufficient degree to mask the primary site. The film of the chest, showing a lesion at the right hilum and infiltration of the left lower lobe, is compatible with a primary lung tumor. These tumors may be widely disseminated to involve regional nodes and the lymphatics of the upper chest, as well as the liver, adrenals, and pelvic nodes. The history of onset, the patient's age and sex, and the fact that such lesions occur more frequently in the right lung would all support such a diagnosis.

Unfortunately, however, it will not explain the finding of priapism. In a search of the literature, I was unable to find any mention of metastases from the lung to the corpora cavernosa. In addition, the fact that the priapism tended to subside after a period of three to four days also makes the diagnosis of tumor metastatic to this site unlikely.

It would appear that all the findings can not be explained on the basis of a single diagnosis—the priapism on the basis of tumor, or the lesions in the lungs on the basis of polyphlebitis. While some of the pulmonary findings might be secondary to infarction, the absence of pain and hemoptysis would make any large infarcts unlikely. It is pos-

sible that the pulmonary findings are not primary in the lung. In this case, on a purely statistical basis, the most likely site would be an asymptomatic gastric lesion with pulmonary metastases simulating a primary bronchogenic lesion. We have no evidence for such a thesis, however.

Since the physical and accessory findings do not suggest a single diagnosis, it would appear that this patient had a *pulmonary neoplasm*, probably primary in the bronchus, with widely disseminated metastases in addition to a *migrating polyphlebitis*.

DR. FRED GARVEY (Urologist): From my knowledge of priapism and the reports in the literature as to its etiology, I believe that the priapism in this patient was probably not due to metastases, but rather to thrombosis of the prostatic plexus, the corpora cavernosa, or both. The reports show that the most common etiology is local thrombosis or hematoma, or local inflammatory conditions of the penis. There have been reports of new growths of the penis which have invaded the corpora and produced priapism, and apparently such a condition is not rare.

One hundred and seventy cases of priapism were reviewed a few years ago by Dr. Hinman, and he found that none was due to metastatic carcinoma. Since that time, however, three or four cases of metastatic tumor have been reported, in some of which actual invasion of the corpora occurred.

Transitory or recurrent cases of priapism are usually on an inflammatory basis or result from certain diseases of the central nervous system affecting the nerves of erection. Such a condition is ruled out in this case, which is undoubtedly a true priapism. The most likely basis is thrombosis, though it could possibly be due to metastatic tumor.

DR. J. P. ROUSSEAU (Roentgenologist): The radiographs of the chest in this case show localized emphysema of the right lower lobe, pleuro-diaphragmatic adhesions at the base, and an irregular infiltrating nodular mass at the root of the right lung. One also sees diffuse nodular and linear infiltrations in the left lower lung field.

Localized or lobar emphysema in a patient of this age with a chronic illness almost always means bronchostenosis secondary to tumor. In early cases, this type of emphysema is the only roentgen evidence that a tumor may be present. In this patient, however, the mass at the right hilum and the diffuse

infiltrations in the left lung field almost certainly lead to the conclusion that a bronchogenic tumor is present, with metastases to the left lung.

Pathologic Discussion

DR. C. C. CARPENTER: At autopsy, two principal disease processes were found, which led to the same result—that of multiple venous thromboses in various parts of the body.

(1) There was *hypertensive heart disease*. The heart weighed 550 Gm. (normal weight 250 to 350 Gm.). The enlargement was in the left ventricle, which measured 3 cm. in thickness. Microscopically, the myocardium showed muscle degeneration, round cell infiltration, and fibrosis. The valves and coronary arteries were within normal limits. That the heart was beginning to fail was evidenced by chronic passive congestion of the liver and lungs, and the presence of bilateral hydrothorax and ascites.

The relatively normal blood pressure (130 systolic, 80 diastolic) on admission to this hospital could be accounted for by the recent bed rest, by a partially failing myocardium, by bilateral adrenal metastatic tumors, or by a combination of these three factors.

(2) There was an *adenocarcinoma*, mucoid in type, that began in the bronchial mucous glands. Metastases were present throughout both lung fields, and in the liver, mediastinum, both adrenal glands, and the brain.

(3) There were *multiple venous thrombi* with infarcts in the lungs and spleen.

It is well known that heart failure with venous congestion is frequently followed by multiple venous thromboses. This case was presented tonight to illustrate another cause of multiple venous thromboses, not so frequently diagnosed. In 1862, Amand Trousseau made the following statement:

"When you are undecided about the nature of a disease of the stomach, when you hesitate between a chronic gastritis, a simple ulcer, and a carcinoma, a phlegmasia alba dolens occurring in the leg or arm will put an end to your indecision and you will be able to assert positively that a carcinoma is present. I have shown you analogous cases in my wards and I have asked you to notice that this obliterative phlebitis did not pertain exclusively to carcinoma of the stomach and that it might occur with cancer affecting any internal organ whatever."

Sproul⁽¹⁾, in a review of 4258 autopsies performed at the Presbyterian Hospital in

New York, found thrombus formation in 617 cases, of which 150 showed carcinoma as the primary condition. Of the cases of carcinoma associated with multiple venous thrombi, the primary tumor in 17 per cent was in the pancreas; in 2.5 per cent it was in the lung; and in 1.3 per cent it was in the stomach.

Several other authors⁽²⁾ have reported the development of multiple venous thrombi to be the first manifestation of obscure carcinoma. Various hypotheses have been advanced to explain the mechanism of this occurrence: (a) direct invasion of the venous trunk by tumor, forming an obstructing mass; (b) emboli from scattered cell fragments; (c) alterations in the coagulability of the blood, especially in pancreatic carcinoma.

In carcinoma of the pancreas, the increase in secreting pancreatic tissue causes an increase in the pancreatic juice reaching the duodenum. Vitamin K, which increases the coagulation of blood, is fat soluble. Therefore, in carcinoma of the pancreas, the lipase in the pancreatic juice, acting in the duodenum on fatty foods, would accelerate the absorption of vitamin K and make the blood more coagulable. The increase in clotting power of the blood is not so easily explained in carcinoma of the lung, stomach, and other organs. There is, no doubt, yet an unknown factor in the process.

Dr. Cayer has correctly made a diagnosis of primary carcinoma of the bronchus and multiple thromboses. He expressed doubt that all of the findings could be explained on the basis of a single diagnosis. We believe that the *carcinoma of the bronchus* and the *multiple venous thromboses*, in this case, represented the same disease process. *Venous congestion from a failing heart* may also have contributed to the production of the thrombi.

2. (a) Cooper, T. and Barker, N. W.: Recurrent Venous Thrombosis: An Early Complication of Obscure Visceral Carcinoma. *Minn. Med.* 27:31-36 (Jan.) 1914.
- (b) Norris, C. M.: Early Clinical Features of Bronchogenic Carcinoma: Illustrative Cases. *Dis. Chest* 11:198-217 (March-April) 1918.

Where Is It? \$10,200,800,000 has been paid into the Social Security Administration in eleven years and \$849,000,000 collected in interest. Benefits paid total \$1,689,600,000 and administrative costs \$246,000,000. The kitty remaining is over nine billion. Where do you suppose it is?—From the News Letter, American Medical Association, April 8, 1948.

1. Sproul, E. E.: Carcinoma and Venous Thrombosis: The Frequency of Association of Carcinoma in the Body or Tail of the Pancreas with Multiple Venous Thrombosis. *Am. J. Cancer* 34:566-585 (Dec.) 1938.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

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THE CONTROL of pulmonary tuberculosis depends on the early diagnosis, isolation and treatment of the active cases. Nothing has been added to our knowledge in recent years to change this fundamental fact. In its early stage, tuberculosis has no characteristic symptoms and no significant physical findings. X-ray examination is necessary for its detection.

THE DIAGNOSIS OF PULMONARY TUBERCULOSIS

It is important to place pulmonary tuberculosis near the top of the list of diagnostic possibilities in cases giving a history of nervousness, digestive disturbance, loss of weight, productive cough, and pulmonary hemorrhage. When the disease is accompanied by such symptoms it is usually easy to find tubercle bacilli in the sputum and chest films show extensive infiltration and cavitation. Such patients still make up a large majority of those admitted for sanatorium treatment. Extensive surgical procedures are frequently required for permanent arrest of the infection. Treatment periods run to two and three years with significant mortality rates. The patient with arrested advanced disease is a handicapped individual whose rehabilitation offers further problems. Reactivation of the infection in later years occurs with disappointing frequency. Everyone around such a patient has been exposed to tubercle bacilli for weeks or months. The disease perpetuates itself in this way.

The early case offers a pleasant contrast to the above picture. There has been little opportunity for spread of infection and arrest of the disease can be achieved much more frequently with shorter periods of treatment. When collapse therapy is necessary the simpler procedures are usually sufficient. The residual handicap is slight and recurrence of active disease in later life is exceptional.

It is therefore of basic importance in the diagnosis of pulmonary tuberculosis to find it in the early stages. Failure in early diagnosis has often occurred because physicians had a low index of suspicion of its presence. It is not unusual for the first search for tuberculosis to be made at the suggestion, or even at the insistence, of the patient. At other times tuberculosis may have an acute onset and advanced disease is discovered soon after the first symptoms.

However, the majority of cases of pulmonary tuberculosis develop slowly. Symptoms are absent or so slight that the individuals seldom go to doctors and their examination must be brought about by education and community endeavor. When patients seek medical advice the diagnosis of pulmonary tuberculosis becomes a direct professional responsibility which can be met only by considering the possibility of tuberculosis in every patient. The private physician has been a leader in tuberculosis case finding in the past. Routine methods will be required to maintain this position in the face of the decreasing morbidity of the disease.

Misplaced confidence in physical examination is another common cause for delay in the discovery of

pulmonary tuberculosis. Too much stress cannot be placed on the limitations of physical diagnosis. In almost every case of early or latent pulmonary disease, percussion and auscultation are so inadequate as to be practically a waste of time. Doctors continue to be surprised at the extent of pulmonary lesions as shown by X-ray examination. Most minimal and many advanced cases of active pulmonary tuberculosis would easily be missed in even a careful physical examination.

There are two methods of screening out the few cases without depending on symptoms and physical findings. These are the tuberculin test and the X-ray examination of the chest. One or the other should be used routinely. The chest film appeals to most doctors because it also reveals cardiac and other pulmonary abnormalities at once. These advantages have led to the present campaign for X-ray examination of all hospital admissions. In office practice the tuberculin test is very helpful as it takes little time. A positive reaction indicates previous exposure to tuberculosis and is an indication for proceeding with X-ray examination. [Another screening method for physicians in general practice is the use of the fluoroscope. If the fluoroscope shows suspicious findings, the patient can then be tuberculin tested and a chest X-ray made—Author's note.]

The patients with suspicious X-ray shadows are found by these screening methods. Evaluation of the film findings in each instance requires a complete history and careful clinical study including a tuberculin test. For practical purposes a negative tuberculin reaction rules out active tuberculosis.

It is necessary not only to determine the presence of tuberculosis, but also the degree of activity of the lesion. Recovery of tubercle bacilli from pulmonary secretions gives absolute proof of active disease. Culture or guinea pig inoculation of one or more fasting gastric specimens may be required in the absence of a productive cough. Serial chest films are always more helpful than any single examination. An unstable tuberculous lesion, even though retrogressive, must be considered active.

The search for pulmonary tuberculosis has been greatly stimulated by the practical application of small film photofluorography. This trend will probably continue with community and industrial surveys and with the study of hospital admissions. All physicians will be having these chest X-ray problems brought to their attention. Tuberculosis will be outnumbered by other abnormalities of the lungs, mediastinum and cardiovascular system. More frequent opportunities will be available for early diagnosis of malignant tumors, especially bronchogenic carcinoma. Here, everything depends on prompt referral for surgical exploration and resection.

The Diagnosis of Pulmonary Tuberculosis, George H. Vernon, M.D., Illinois Medical Journal, December, 1947.

Although the X-ray apparatus detects pulmonary lesions more readily than the stethoscope, chest roentgenology has not yet advanced to the point where it can be substituted for logic or reasoning. Diagnosis is a function of logic, and the diagnosis of chest diseases, especially tuberculosis, depends on the correlation of clinical, roentgenologic and bacteriologic studies. No X-ray machine can do this. The diagnosis of tuberculosis or its degree of activity should never be based wholly on the X-ray report of the chest findings. "Never put your complete trust in shadows" is a sound medical adage that applies especially to tuberculosis.—Joseph D. Watters, M.D., N. E. Jour. Med., July 13, 1947.

PUBLIC RELATIONS

Medical public relations may be considered as an expression of individual physician morale collectively influencing the relations of human beings in all other walks of life to that of medicine for the mutual good of both. It has two essential phases.

1. An effort in concert on the part of physicians of medicine to develop a high plane of science and ethics among themselves as the requisite conditions of medical service and professional morale.

2. Purveying to the mass of people—the public—a broader understanding of the science of medicine and the tremendous benefits accruing from it to the people under the current advantages of guidance and control through professional ethics.

Medicine was never on a more satisfactory level in respect to scientific progress, but persistence should be the order in advancing the science of medicine to the end that the high confidence of the people in that portion of professional morale may be maintained, and even furthered in the application of new discoveries and newer methods in the practice of medicine. At points, the ethics of medicine is under serious attacks, and, in instances, rightly so. The gamut of complaints, when carefully analyzed, may not be justified, and for the most part they are not justifiable. Nevertheless, the profession has allowed critical phases of medical service to go unattended in instances, and these instances have been sufficient to invoke much ill will. It matters little that there has been an exaggeration of gaps in adequate medical service and neglect in others, for it is all important that these gaps be recognized and filled—as they are being filled—and that elements of neglect in the ethical responsibility of medicine be corrected promptly. These are requisite to proper service and morale in medicine, and the profession will do well to persist in adjusting inadequacies, deficiencies, and areas of neglect to the ultimate and real needs of the people.

The individual intimacy of the physician with his patient has been seriously diminished in our time. Medical contact with the patient is more and more passive under the circumstances of the modern practice of medicine. The "old lovable" relationship of "family doctor" to his patient scarcely prevails any more, and with the passing of this

bond of friendship and respect has gone that high sense of loyalty which engendered an all-out understanding of the medical profession and which sustained it economically and morally until more recent years.

Somehow medicine needs to recapture and to revitalize the individual respect and loyalty which characterized this earlier relationship of physician and patient.

So, through a program of medical public relations, the profession—as in its science—has turned to new methods and new procedures. It undertakes through organization and personnel to emphasize to its members, and immediate co-workers, the importance of making a day-to-day effort to engender a better patient-understanding of modern medical science, its limitations as well as its efficiencies; of assuming a deeper sense of responsibility for filling unmet gaps in medical service in areas; of fulfilling the ethical responsibility of immediate and adequate service to patron patients; of joining hands in promoting civic devices and civic agencies which serve as adjuncts to the more adequate development and distribution of medical care and medical service in the community. The practicing physician, through his professional group, must lend his personal and financial support to such a coordinated program if we are to correct the misunderstandings which prevail in the public regard, and regain the confidence, respect, and cooperation of the public on that level which prevailed a short while ago.

It may be predicted that the coming year will be a crucial period in the history of medicine in our country. By personal example in daily contacts, by an interest and effort in community enterprises for the health of the people, and by the personal and financial support of professional medicine through its public relations programs during this crucial period, the individual physician may hope to regain for the future the prestige, respect, and affection of the past.

ROSCOE D. McMILLAN, M.D.
Red Springs

Praise of a colleague as good public relations.—To my knowledge, no doctor has ever hurt his own reputation by publicly praising outstanding work of another doctor. There is reason to believe that a little more of such justifiable praise would do much to allay the common misconception that medical men are split by wide personal differences and jealousies.—A. E. Cardle: *The New Look in Medicine*, Minnesota Med. 31:861 (Aug.) 1948.

CORRESPONDENCE

TREATMENT OF FRACTURED FEMURS

To the Editor:

After reading the article by Drs. Moore and Schafer on the treatment of fractured femurs (North Carolina M. J. 9:514-519 (Oct.) 1948), I would like to report a method which I have found satisfactory for use in cases where it was impossible to admit patients to a hospital for treatment. I have treated 7 cases of fracture of the femur by this method, with perfect results. The legs were as straight and long as they were before the fracture.

I learned of this method in the early part of this century, when we did not have hospitals or plaster casts. I was called to see a fat girl, 7 years of age, who had small bones. She had broken her right femur just above the knee and just below the hip joint. I tried twice to put the leg in splints, but I could tell that the bones were not in apposition. When I held the thigh up so that the knee was bent in a forty-five degree angle, I could see that the bones dropped into good position. I found a wooden soap box, which I cut to fit her thigh. After putting a cloth on the box, I laid her leg on it. Later I made a frame to take the place of the soap box, and I kept her on this for eight weeks. Then I had her use crutches for a while. Her leg was just as long and straight as it was before the break.

Later I made an adjustable frame that would fit most of the cases I used it on (fig. 1). I put a pad under the knee and fastened the thigh on the frame by putting a bandage under the thigh, pulling the outside bandage across the thigh, and fastening it to a screw eye on the inside of the frame; then I pulled the inside bandage across the thigh and fastened it to a screw eye on the outside of the frame. This holds the thigh as stationary as a plaster cast will. The foreleg and foot provide all the traction that is needed. I left the foreleg loose during the day, but tied it down at night to keep it from getting out of place. When the foreleg is loose, the patient can raise it when the muscles in the thigh contract, as they will do for a week or ten days.

The patients treated by this method did not suffer very much and did not require medicine to relieve pain after the first few

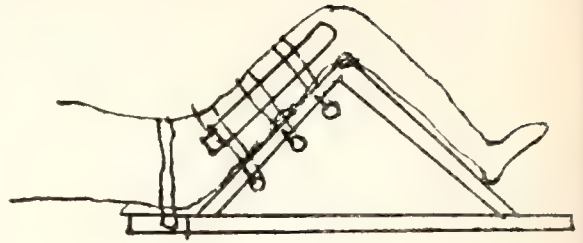


Figure 1

days. One of the patients was a baby 18 months old.

I never had occasion to treat a fracture of the hip joint, but I believe this relaxed position would be just as satisfactory as in the treatment of the fractured femur.

S. A. Wilkins, Sr., M.D.
Dallas, N. C.

(Just now I am a patient in the Veterans Hospital, Ward 3, Columbia, S. C.)

DEATH CERTIFICATES

November 19, 1948

To the Editor:

I would appreciate your assistance in bringing to the attention of the physicians of North Carolina a matter of importance to the vital statistics program of our state and to the public relations of the medical profession.

The North Carolina statutes require that undertakers prepare death certificates for deceased persons whom they are called upon to inter. The undertaker is required to present the death certificate to the attending physician for signing. The law further states that no disposition of the body shall take place until a signed death certificate has been deposited with the local registrar of vital statistics and a burial permit has been secured in exchange.

If this procedure were followed as specified, practically all death certificates would be filed within twenty-four hours after death occurred. Unfortunately, the procedure actually being followed in many cases is not in accordance with the law. The State Board of Health receives approximately 2500 death certificates monthly. For every three of these certificates filed on time, two others are filed from one to six months or more late. This means that about 40 per cent of North Carolina death certificates are filed

after the funeral of the deceased has taken place.

The most serious consequence of this state of affairs is that many certificates are neglected so long that they are lost. Almost daily the Bureau of Vital Statistics receives requests for certified copies of death certificates that should have been filed months ago, but which have never been received. The families of these individuals are thereby caused delay and inconvenience in completing various insurance and pension claims. In addition, the vital statistics for the state are in error by a considerable percentage.

The Society's own Maternal Welfare Committee, under its able chairman, Dr. Frank Lock, has found its continuing study of maternal deaths considerably handicapped by delays in the filing of death certificates.

There are several reasons for this situation. The State Board of Health has itself been slow to take steps to improve registration. Local registrars have not, in all cases, been properly supervised. This latter problem is being solved, to a considerable extent, by transferring vital statistics registration to full-time county health departments as rapidly as circumstances permit. It is expected that at least half of our counties will have health officer registrars in the near future.

Two additional reasons for our difficulty are that undertakers have been negligent in following the required procedures and that physicians have not, in all cases, given sufficient attention to this important matter. It is this latter point that we wish to emphasize here. We receive frequent complaints from undertakers that they have left certificates with physicians for signing without prompt results, or that they have had to wait long periods in waiting rooms before being seen.

If the law were suddenly to be strictly enforced so that no funeral could take place without a death certificate having first been signed, the public relations of the profession would suffer considerably in those cases where adequate cooperation was not extended to undertakers.

In the coming months, it is our plan to approach this problem from all sides and make an honest effort to put North Carolina death and birth registration back on a basis comparable with the best records of other states. To do this we will need the coopera-

tion of all parties concerned, including every North Carolina physician.

Yours sincerely,
J. W. R. Norton, M.D.
Secretary and
State Health Officer

BULLETIN BOARD

MINUTES OF EXECUTIVE COMMITTEE MEETING

September 26, 1948

The Executive Committee of the Medical Society of the State of North Carolina met in Raleigh at the Hotel Sir Walter on Sunday, September 26, 1948, at 11 a.m. In the absence of the president of the Society, the first vice president, Dr. Joseph J. Combs of Raleigh, called the meeting to order and presided until the arrival of President James F. Robertson, who had been delayed.

On instruction of the presiding officer, the executive secretary called the roll.

Officers present:

President—Dr. James F. Robertson, Wilmington
President-Elect—Dr. G. Westbrook Murphy, Asheville
First Vice President—Dr. Joseph J. Combs, Raleigh
Second Vice President—Dr. Joseph A. Elliott, Charlotte
Executive Secretary—Mr. James T. Barnes, Raleigh

Councilors:

First District—Dr. Zack D. Owens, Elizabeth City
Second District—Dr. John C. Tayloe, Washington
Third District—Dr. Donald B. Koonce, Wilmington
Fourth District—Dr. Newsom P. Battle, Rocky Mount (Called away during meeting and requested Dr. Tayloe to serve as proxy.)
Sixth District—Dr. Millard D. Hill, Raleigh
Seventh District—Dr. Elias Faison, Charlotte
Eighth District—Dr. James H. McNeill, North Wilkesboro
Ninth District—Dr. Irving E. Shafer, Salisbury
Tenth District—Dr. Donald M. McIntosh, Old Fort

Others present:

Dr. V. K. Hart, Chairman of Committee to develop plan of prepayment hospital and medical service voluntary insurance, Charlotte
Dr. John S. Rhodes, Associate Committeeman, Raleigh
Mr. E. B. Crawford, Executive Vice President of North Carolina Hospital Saving Association (invited consultant), Chapel Hill
Miss Mary Robinson, Reporter, Raleigh

Vice President Combs recognized Dr. V. K. Hart, chairman of the reporting committee, and requested that he present his report and direct discussions. The report was tendered along with an agenda. Dr. Shafer moved that the committee proceed as per the agenda, and the motion was seconded and carried.

Agenda Item 1. "Do you favor such a system of insurance as proposed?" Dr. Shafer moved that the Executive Committee go on record as favoring such a system of insurance. The motion was seconded.

At this point, on motion duly made, seconded, and carried, proceedings were interrupted to hear from Dr. Battle, who suggested two things: (1) sell the

plan to everyone on a ward basis; (2) the doctor would be obligated to serve patients at the prepayment fee only while in the ward.

Dr. Hart stated that the Committee had considered this question and that there were not enough ward beds in the state to establish the plan on that basis. Mr. E. B. Crawford analyzed a survey of the total hospital beds in the state showing an average of 38 to 40 per cent ward beds. He stated that the consensus of plans indicated it better to establish the program on the basis of individual income rather than on accommodation.

Dr. Hart stated that after extensive discussion of the whole basis of this program, the committee felt that it would be in the interest of simplicity to offer a complete coverage with the one exception of the hospital room; that a minimum allowance should be decided upon; and that the accommodation the patient takes outside of such allowance should not affect his claim.

The question was called and several voted "aye." Dr. Battle voted "No" with an explanation that he did not exactly understand the question and reiterated that he was in favor of insurance.

Taking the chair, President James F. Robertson presented **Item 2**: "If so, do you agree with the income brackets as specified?"

Dr. Hart stated the income brackets recommended: "Total annual income of \$3,000 where only one member of a family is working; \$2,500 for a couple; and \$2,000 for an individual." Having called for discussion the president assumed the stated income brackets to be approved in the absence of discussion by those present.

The president presented **Item 3**: "Do you agree with the recommendation that this plan per se be sold as one package—that is, the medical and surgical plans not be sold separately?" Mr. Crawford was invited to discuss this point. He stated that the idea is good of combining the medical and surgical features and presenting it as a state-wide program with proper publicity of the fact that the physicians of the state are supporting it. Dr. Hart stated that the medical representatives on the committee opposed the separation of the medical protective feature of the plan and expressed the sense that the plan should be an all-inclusive one because some of the most catastrophic illnesses are medical. He stated that the committee felt it would be unwise to separate the features in any way and that it should be sold as a unit or not at all.

Dr. McNeill moved that the plan be sold as a unit. The motion was seconded and carried.

The president presented **Item 4**: "The resolutions setting up this Committee and adopted by the House of Delegates specified that the plan have as its official operating agency the Hospital Saving Association or merged corporation. Since there has been to date no merger, the Hospital Saving Association becomes the official agency. Should the Hospital Care Association also be allowed to underwrite this program?"

Dr. Hart commented that the success of the plan depended upon the cooperation of doctors, who must be satisfied with the plan, and expressed the view that the fee schedule could be underwritten by any organization, excepting that one be the official agency—Hospital Saving being the logical agency sponsored by the State Medical Society—whose responsibility it would be to elicit the individual voluntary participation of physicians of the state. Should a nonofficial agency adopt the schedule, it would become a cash-indemnity schedule which the individual doctor could accept in whole or in part in settlement of his fee, or not accept at all.

Mr. Crawford commented that this medical service program is the only Blue Shield plan in the state, and that Hospital Saving, being sponsored by the Society, can offer the plan with the requisites of sponsorship, approval, and control by the Medical Society. No other organization is contracted to do so, with the continuing authority of the Society to direct procedures, make adjustments as required, and have its instructions carried out. He referred to capitalization established by the Hospital Saving Board, which obviates the necessity for physicians to establish a specific buffer fund, and stated that where the administering agency is recognized by the State Society, sales are facilitated.

Dr. Koonce referred to the limiting authority of the House of Delegates resolution and it was agreed that it limited the official agency to the Hospital Saving Association.

The president referred to **Item 5**: "Do you agree with the fee schedule?" He made the comment that x-ray charges now being paid by Hospital Saving approximate those recently presented by the radiology representative on the Committee; that a radiologist may enter into any contract of his choosing with any hospital and that to dictate such was not within the province of the Executive Committee; but that such a schedule provides a basis for uniformity of charges compatible with the income group insured. The president also referred to proposed additions to the dermatologic schedule as submitted.

Members referred to inequalities shown on the schedule and to the exclusion of certain medical emergencies, as well as exclusion of a fee during the first two days on medical cases. It was agreed that the discrepancies, inequalities, and additions in and to the fee schedule should be made equal and that this would be done. As for the two day exclusion, Mr. Crawford explained this was provided to avoid a high incidence of nuisance admissions and to protect the rate in line with the financial cost. The physician may still charge the patient for the two days and the policy will be sold with that understanding. It was generally agreed that the type of medical emergencies to be included during the first two days should be definitely listed on a schedule which would accompany the policy.

Dr. Hill made the following motion, which was seconded by Dr. Combs: **RESOLVED THAT THE Executive Committee adopt the plan and fee schedule for prepaid medical insurance as written and submitted by the Committee to develop a plan of prepayment hospital and medical service voluntary insurance, and that said committee be continued for the next three years to guide and direct the program, and that any suggestions from members of the Executive Committee or any other persons be turned over to the continuing committee for consideration and action.**

Dr. Murphy discussed x-ray fees, and particularly the effect that the adoption of the schedule of fees would have on the position of state agencies seeking to establish ceilings on medical fees. He thought that fees established should be equal to or above those prevailing for industrial cases.

Dr. Hart commented on prevailing Blue Cross fees for diagnostic x-ray service and suggested that the schedule compared favorably with those now being paid by Blue Cross. Mr. Crawford indicated that the plan provided greater uniformity in x-ray charges than on any other type of service.

It was agreed that the inclusion of fees in the schedule for anesthesia administered to hospitalized patients was proper, and that discrepancies in fees

for conditions treated by two types of specialists should be adjusted so as to be equal.

It was agreed that dermatologic cases treated in the hospital should be on the same fee basis as medical cases, and that a list of dermatologic conditions to be included for the first two days of treatment should be made. Dermatological surgery performed in the office would not be excluded.

There was a prolonged discussion of the question whether to include x-ray therapy in the schedule in connection with malignancies. It was the consensus of views that the subject required further study and action by the reporting committee.

Following a recess for lunch, the president presented **Item 6**: "Do you think this plan should be binding either on the Hospital Saving Association or on the participating doctors for more than one year? At the end of this time, should any needed changes because of the inflationary period in which we find ourselves be left to the officials of Hospital Saving and the present committee, subject to the approval of the Executive Committee of the State Society?"

Dr. McNeill made the motion, seconded by Dr. Tayloe, and unanimously carried: "RESOLVED that the plan be adopted for one year, subject to the changes that may be agreed upon by the committee."

The president presented **Item 7**: "There should be a Fee Committee to set fees that are questionable or difficult to classify. Thus some fees are left on the schedule as 'Individual Consideration.' This should be a small, readily assembled committee of one medical man and two surgeons from the Greensboro-Chapel Hill-Raleigh-Durham area. How do you wish such a committee selected? Appointed by the president? Not members of this committee?"

Dr. Shafer moved that there be a Fee Committee; the motion was duly seconded and carried.

The president raised the question of how to select the committee. Dr. Koonce moved that it be appointed by the president, with the advice of Dr. Hart; this motion was seconded by Dr. Tayloe and carried.

The president presented **Item 8**: "Do you agree that the Executive Committee should hear and arbitrate disputes arising from the execution of this plan?"

Dr. Hart referred to the balance of the Executive Committee, its medical and surgical representatives, and its position as the official organ of the Society. Dr. Elliott made a motion, seconded by Dr. Shafer: "RESOLVED that the Executive Committee be designated to hear and arbitrate disputes that may arise resulting from the plan." The motion was carried.

The president presented **Item 9**: "What do you think about appropriate publicity for this plan? This could be very helpful in our public relations. If approved, (a) through the Secretary's Office, (b) through the public relations department of Hospital Saving (c) both (d) how to finance? This plan should be brought to the attention of state employers."

Dr. Hart commented that when the plan is inaugurated there should be publicity about it, and that while the doctor in his office would become the best publicity agent, there should be some initial publicity.

The president felt that the Public Relations Committee's Speakers Bureau and the Rural Health Committee's county health councils would be a means of publicizing the plan. Dr. Murphy moved that publicity for the plan be left to the Public Relations Committee; the motion was seconded by Dr. Elliott and carried.

Dr. Hart referred to the desire of the Polio Foundation and the State Department of Vocational Rehabilitation for copies of the fee schedule. Dr. Koonce moved that a copy of the fee schedule be sent to the State Director of the National Foundation for Infantile Paralysis as a guide in paying for the treatment of poliomyelitis cases. The motion was seconded by Dr. McIntosh and carried.

Dr. Hart reported that the committee preferred to recommend that a fixed payment for the hospital room be established, and that where there was a difference in this payment and the rate of an occupied accommodation, the patient pay that difference. The question was raised as to what fixed rate would nearest meet the varied costs of a ward bed and, under this plan, constitute complete coverage. A basic room rate of \$5.00 was suggested—the ward rate to be paid in any event—applicable to all accommodations. The ultimate aim in Blue Cross is to offer accommodation. Mr. Crawford inquired whether it was permissible to add this medical and surgical program to the present hospital coverage. Discussion ensued as to the relationship of the established income brackets of the medical-surgical plan to the hospital coverage of other plans sold and to be sold by the Hospital Saving Association.

President Robertson explained that where the medical-surgical plan is sold to the higher income group it would be sold as indemnity rather than complete coverage, and that this would obviate the separation of individuals in the sales procedure to combined employer-employee groups.

Mr. Crawford pointed to the difficulty of restricting sales to certain income groups, because of the constant change in the income level of the individual. He agreed that individual income could be certified at the initial sale, and said that a statement of income should be obtained each time the insured comes for service.

Members seriously questioned the burden of the latter procedure. After the conditions of the proposed insurance policy were read, Dr. Murphy suggested its amendment to include a positive statement that, if the income of the insured exceeds the limits specified, the participating physicians do not agree to accept the stipulated fee in full settlement of service. This conclusion was generally agreed upon.

Dr. Elliott moved that the Executive Committee approve the suggestion that the Hospital Saving Association provide ward coverage or \$5.00 toward any other type of accommodation. The motion was seconded by Dr. McNeill and carried.

President Robertson raised the question of the merger of the two hospital insurance associations and requested the reading of a letter dated September 22, 1948, directed to Dr. Robertson by Dr. George L. Carrington, chairman of the Society's Committee on Merger. The letter was read and considered in part as follows: "Both the Hospital Care Association and the Medical Society have approved the merger plan submitted to them, but the Hospital Saving Association has still failed to do so." President Robertson asked Mr. Crawford to give the views of the Hospital Saving Association. Mr. Crawford presented a resolution passed by the Board of Trustees of the Hospital Saving Association on May 27, 1948. The resolution referred to resolutions of the Medical Society adopted on May 3, 1948, looking toward a merger of the Hospital Saving and Hospital Care Associations, and to a similar resolution approved by the trustees of the North Carolina Hospital Association, and then expressed its own resolves, "as being extremely sympathetic with said resolutions . . . convinced that there should be only

one Blue Cross approved plan operating in the state . . . Board of Trustees will consider any proposal of merger, the results of which will insure an organization which is organized on and committed to Blue Cross principles and having a board structure composed of an equal number of representatives each of the Medical Society, the Hospital Association, and the public at large, and geographically representing all areas of the State . . . will continue to cooperate further with any efforts of the North Carolina Medical Society, the North Carolina Hospital Association, Inc., looking towards merger of these two Associations." The resolution referred to a letter of May 24, 1948, received from Hospital Care indicating that its Board of Directors had not considered the action of the Medical Society and the trustees of the Hospital Association and "that there are numerous points other than board structure to be discussed and agreed upon before the merger committee of Hospital Care would likely make recommendations to the Board of Directors of the Hospital Care Association, Inc., regarding merger," etc. Mr. Crawford stated that a copy of this resolution was sent to the chairman of the Medical Society's Committee on Merger.

Dr. Hart reviewed the history of the merger movement, particularly of the survey and report of a joint merger committee designated by the two Associations, accepted in principle by Hospital Saving but declined by Hospital Care. Discussion ensued and the points at issue were: (1) the structure of the merged board and authority for appointing the board democratically and equally representing the Medical Society, the Hospital Association, the public, and geographically, the state; and (2) adherence to the service agreement of Blue Cross, as against cash indemnity. No formal action was taken on the questions involved.

At Dr. Hill's request a report of the Rural Health Committee was read, which involved an agreement reached by the committee and the North Carolina Good Health Association relative to organizing rural health councils in certain pilot counties, largely to be financed by a \$5,000 General Education Board grant through the president of the State University. The report recommended that the Society join the Good Health Association in underwriting an additional \$1,000 each in support of the program for one year. If needed, in the employment of a qualified rural health worker.

Dr. McNeill moved that \$1,000 be appropriated for the rural health worker. The motion was seconded by Dr. Koonce and unanimously carried.

There being no further business, the Committee adjourned.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The seventy-sixth annual meeting of the American Public Health Association was held in Boston, November 8 through 12. Dr. E. G. McGavran, of Chapel Hill, is a member of the executive board of the Association, and Miss Helen Martikainen, of the North Carolina State Board of Health, presided over one of the important meetings of the Public Health Education Section. Dr. J. W. R. Norton, State Health Officer, was elected vice president of the Harvard School of Public Health Alumni Association. Dr. Ivan M. Procter, Director of Cancer Control for the State Board of Health, outlined North Carolina's cancer detection program.

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On March 1, 1948, the Division of Cancer Control of the North Carolina State Board of Health was activated. Since then, three Cancer Centers have been established and are operating smoothly. A Cancer Center consists of a Detection Clinic with a staff of four medical examiners, and a Diagnostic-Management Clinic with a staff of six specialists.

The first center was established in New Hanover County, at Wilmington, on April 27. The director is Dr. Donald B. Koonce. The second was opened in Buncombe County at Asheville on July 15, with Dr. E. D. Peasley as director. The third was opened in Forsyth County, at Winston-Salem, on July 21, with Dr. James F. Marshall as its director.

Each of the Detection Clinics examines thirty to forty applicants in a two-hour period, one day each week. Any person who is found to have a suspicious lesion is referred to the Diagnostic-Management Clinic, where his case is thoroughly studied by a staff of specialists. These specialists make a complete diagnosis and recommend modern and adequate treatment and management for the patient. The final diagnosis and recommendations are sent by letter to the patient's personal physician. Approximately 25 per cent of those examined in the Detection Clinic are referred to the Diagnostic Clinic.

No treatment is carried out in the Clinic. All those who are found in need of treatment, whether for cancer or another ailment, are referred back to their family or personal physicians for treatment.

Any citizen of North Carolina, without regard to race, color, creed or economic circumstances, may be admitted to the Clinics for examination. For the sake of a speedy survey of a relatively large number of citizens most liable to have cancer, only men and women 40 years of age or older are admitted to the Detection Clinics. Patients admitted to the Diagnostic Clinic consist of those in whom a so-called "suspicious" lesion or condition is found in the Detection Clinic, or any person, of any age, who has any one of the Seven Danger Signals listed by the American Cancer Society. Cases studied in the Diagnostic Clinic must be referred by a physician—a private practitioner, a Detection Clinic examiner, a local health officer—or a welfare officer.

A survey of the work done by three Cancer Centers, operating an average of three and a half months, reveals that 1277 citizens were examined in the three Detection Clinics. More than half (54 per cent) of these revealed disease of one form or another which indicated the advisability of medical attention. Six hundred and eighty-eight were referred to their family physicians for treatment and advice. Three hundred and forty-nine, or approximately one out of every four Detection Center examinees, were referred to the Diagnostic Clinic for complete examination. Seventy-six of this number were found to have cancer. That represents more than 6 per cent of the total number examined, and twelve times the average found in Detection Clinics throughout the nation.

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The total number of diphtheria cases reported for the first four months of the current diphtheria season now stands at 127. The total of 127 cases for the current season, to date, for 1948 compares favorably with the total for the same period last year of 180 cases. There is a possibility that 1948 will show a record low total for diphtheria incidence. This disease has undergone a spectacular decline in the last twenty years. This decline has been due almost exclusively to the use of diphtheria toxoid by physicians and health departments to immunize children.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Scientists engaged in tuberculosis research in all parts of the world are being supplied with standard strains of the tubercle bacillus through a Culture Bank maintained by the National Tuberculosis Association at the Trudeau Laboratory, of Trudeau Sanatorium, Trudeau, N. Y.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE

Dr. Virgil H. Moon, professor emeritus of pathology, Jefferson Medical College, Philadelphia, has been appointed visiting professor of pathology at the Bowman Gray School of Medicine. He will assist Dr. Robert P. Morehead, director of the department, in the reorganization and teaching of classes in pathology. Dr. Moon, who was professor at Jefferson for twenty-one years prior to his retirement, has done outstanding research in the field of shock and has published two books on the subject.

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Dr. C. C. Carpenter, dean, was elected vice president of the Association of American Medical Colleges at the annual meeting held at White Sulphur Springs.

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Dr. Lloyd J. Thompson, head of the department of neuropsychiatry, was elected president of the North Carolina Neuropsychiatric Association at a meeting in Raleigh on November 19.

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Dr. Paul F. Whitaker of Kinston, governor for North Carolina of the American College of Physicians and past president of the North Carolina Medical Society, delivered the commencement address when 38 students graduated from the Bowman Gray School of Medicine on December 19. Dr. Harold W. Tribble, president of the Andover Newton Theological Seminary at Andover, Massachusetts, delivered the commencement sermon.

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Thomas A. Will, senior, of New Baltimore, Pennsylvania, was elected president and Dr. David Cayer, assistant professor of internal medicine, was elected secretary of the Beta chapter of Alpha Omega Alpha, honor medical society, following installation of the chapter at Bowman Gray on November 19. Initiates included six senior students, fifteen alumni, and nine faculty members. Dr. Walter L. Bierring of Des Moines, Iowa, national president, conferred the charter, and Dr. Wilburt C. Davison of the Duke University School of Medicine delivered the principal address for the exercises.

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Dr. Howard H. Bradshaw, professor of surgery, has been elected a member of the board of governors of the American College of Surgeons. His term on the board will end with the annual meeting in 1951.

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Dr. Hans Selye, professor and director of the Institute of Experimental Medicine and Surgery of the University of Montreal, Canada, was speaker at the meeting of the Bowman Gray Medical Society on November 8. His subject was "The General Adaptation Syndrome and the Diseases of Adaptation."

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

The North Carolina Medical Postgraduate Course, sponsored by the Duke University School of Medicine, will be held March 21-24. Dr. William M. Nicholson, associate professor of medicine at Duke, is in charge of arrangements. Further details of the meeting will be announced later.

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Plans have been completed for a new four-story addition to Duke University's medical research building. The addition will be 40 by 80 ft. in size and will be of the same brick, fire-proof construction as the medical research building. It will be added at the rear on the north side of the present structure. Estimated cost of the wing is \$120,000, including services and equipment. The cost is being borne by sources other than university funds.

This new space for research work will enable the medical school and hospital to expand their research program, financed largely through outside grants. Additional space will be provided for research projects in the departments of medicine, surgery, physiology and physiological chemistry.

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Miss Mary C. Singleton, clinical supervisor in the physical therapy division at Duke Hospital, is being lent to the State Board of Health for a six-month period. In serving the board as consultant in physical therapy, Miss Singleton's work will be concerned with organizational planning. Miss Singleton began her work with the State Board November 15.

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The resident training programs in neurosurgery and plastic surgery at the Duke University School of Medicine and Duke Hospital have been approved by the American College of Surgeons.

WATTS HOSPITAL SYMPOSIUM

The Sixth Annual Watts Hospital Medical and Surgical Symposium will be held in Durham on Wednesday and Thursday, February 16 and 17, 1949. The program will be published in the January issue of the *North Carolina Medical Journal*.

AMERICAN COLLEGE OF PHYSICIANS REGIONAL MEETING

A regional meeting of the American College of Physicians for North Carolina was held at the Duke University Hospital in Durham on December 3. Dr. Edward McG. Hedgpeth of Chapel Hill was chairman of the program committee, and Dr. J. Lamar Callaway of Durham was chairman of local arrangements.

Speakers for the afternoon session were Drs. Monroe T. Gilmour and Horace H. Hodges of Charlotte; Drs. David T. Smith, Wiley D. Forbus, H. Lee Howard, R. Wayne Rundles, Leland D. Stoddard, and I. H. Manning, Jr., of Durham; Dr. A. T. Miller, Jr., of Chapel Hill, Dr. Arthur J. Freedman of Greensboro, and Dr. K. D. Weeks of Rocky Mount. Dr. Walter W. Palmer of New York, president of the American College of Physicians, and Mr. E. R. Loveland of Philadelphia, executive secretary, were guests at the informal dinner held at the Washington Duke Hotel at 7 p.m. Dr. Paul F. Whitaker of Kinston, governor for North Carolina, was toastmaster.

UNVEILING OF DR. MCCAIN'S PORTRAIT

The portrait of Dr. Paul P. McCain which was presented to the State Tuberculosis Sanatorium by the Medical Society of the State of North Carolina was unveiled in a ceremony held at the Sanatorium at McCain on December 7. Speakers at the luncheon which preceded the unveiling were Dr. E. T. Blomquist of Washington, D. C., and Mr. Charles Cannon of Kannapolis. Justice Wiley Rutledge of the United States Supreme Court paid tribute to Dr. McCain at the unveiling exercises. Dr. Paul F. Whitaker of Kinston, chairman of the McCain Memorial Committee, presented the portrait to the Sanatorium, and Dr. Paul H. Ringer of Asheville accepted it in behalf of the board of directors of the State Sanatoria.

COMMUNITY HOSPITAL OF WILMINGTON

At a recent meeting of the Medical Staff of Community Hospital of Wilmington, the following officers were elected for the ensuing year: H. A. Eaton, M.D., chief of staff; R. T. Sinclair, M.D., assistant chief of staff; D. C. Roane, M.D., secretary, it has been announced by Frank B. Adair, administrator.

Community Hospital is North Carolina's second largest for Negroes, and is affiliated with the Duke Endowment. The entire staff pledged renewed, uncompromising support to the efforts of the Board of Trustees to achieve the highest ratings offered by the American College of Surgeons and the American Medical Association.

"It is significant that more than half the number of physicians and surgeons in the city of Wilmington who have successfully passed American Specialty Boards are now members of our staff," Mr. Adair stated in commenting on the caliber of medical service rendered at Community Hospital.

The roster of medical staff members follows:—
Consultants: H. A. Codington, M.D., F. W. Avant, M.D., and R. B. Hare, M.D. **Medical Service:** E. G. Goodman, M.D., S. J. Gray, M.D., J. W. Dickie, M.D., and S. E. Warshauer, M.D., **Chief, Surgery:** H. A. Eaton, M.D., L. W. Upperman, M.D., and W. C. Mebane, M.D., **Chief, Obstetrics and Gynecology:** W. S. Doshier, M.D., D. C. Roane, M.D., and J. B. Lounsbury, M.D., **Chief, Pediatrics:** J. C. Knox, M.D., and A. McR. Crouch, Jr., M.D., **Chief, Eye, Ear, Nose and Throat:** P. A. Black, M.D., and J. D. Freeman, M.D. **Dentistry:** S. R. Rosemond, D.D.S. **Roentgenology:** R. T. Sinclair, M.D. **Orthopedics:** W. J. Wilson, M.D. **Courtesy Staff:** W. J. Wheeler, M.D.

SOUTHEASTERN ALLERGY ASSOCIATION

The fourth annual meeting of the Southeastern Allergy Association will be held at the Washington-Duke Hotel in Durham, on Saturday and Sunday, January 22 and 23, 1949.

Dr. George Rockwell, president of the American College of Allergists, and Dr. Walter Winkenwerder, president of the American Academy of Allergy, are to be the guest speakers. There will be a panel on "Infectious Asthmas" headed by Dr. Oscar Swineford and a panel on "Food Allergies" headed by Dr. Hal Davison. Saturday noon there will be an informal luncheon for members. Saturday night there will be the regular banquet, to be held at the Washington-Duke Hotel.

Hotel reservations should be made directly with the hotel, and it is suggested that this be done early. Dr. Katherine B. MacInnis, 1515 Bull St., Columbia, S. C. is secretary of the Association.

CARTERET COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Carteret County Medical Society was held at the Morehead City Hospital on November 8. This was a supper meeting, the hospital acting as host.

The guest speaker was Dr. Robert N. Creadick of the Obstetric Department of Duke Hospital. His subject was "Obstetrical Complications, and How to Treat Them." Every member of the Society was present.

Dr. Ennett made a motion that, for the December meeting, the Society invite Drs. J. W. Roy Norton, State Health Officer, J. F. Robertson, president of the North Carolina Medical Society, and Roscoe D. McMillan, secretary of the North Carolina Medical Society, as guest speakers. The motion was unanimously carried.

Dr. J. W. Morris of Morehead City is president of the Society, Dr. F. E. Hyde of Beaufort is secretary, and Dr. N. T. Ennett of Beaufort is corresponding secretary.

CATAWBA VALLEY MEDICAL SOCIETY

The Catawba Valley Medical Society held a dinner meeting in Lincolnton on November 29. Speakers were Dr. E. H. Ellinwood and Dr. Barnes Woodhall.

DAVIDSON COUNTY MEDICAL SOCIETY

Dr. Jean D. Craven of Lexington was elected president of the Davidson County Medical Society at a meeting held in Lexington on December 1. She succeeds Dr. P. M. Sherrill of Thomasville. Dr. R. L. McDonald of Thomasville was elected vice president, and Dr. J. R. Terry of Lexington was re-elected secretary. Dr. Sherrill was named delegate to the State Medical Society, with Dr. Terry as alternate.

Dr. J. A. Smith of Lexington was voted an honorary member for life.

EDGECOMBE-NASH COUNTIES MEDICAL SOCIETY

Dr. Charles M. Norfleet of Winston-Salem and Dr. H. B. Grant of Rocky Mount were speakers at the November meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on November 10. Dr. John A. Lineberry, health officer in Tarboro, was elected to membership in the society.

FORSYTH COUNTY MEDICAL SOCIETY

A dinner meeting of the Forsyth County Medical Society was held in Winston-Salem on November 9. Dr. A. E. Rakoff of Philadelphia spoke on "The Treatment of Functional Menstrual Disorders."

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society heard Dr. Mildred Schram of the State Board of Health discuss "Cancer Detection and Control Programs" at its November meeting, held in Roanoke Rapids on November 19.

WAKE COUNTY MEDICAL SOCIETY

Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, was guest speaker at a dinner meeting of the Wake County Medical Society, held in Raleigh on December 9.

NEWS NOTES

Dr. Donald M. McIntosh, Sr. of Old Fort, counselor of the Tenth District, died recently. Dr. W. A. Sams of Marshall was named counselor in his place.

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Dr. Robert L. McGee of Raleigh died of poliomyelitis on November 11.

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The following North Carolina doctors are initiates of the American College of Surgeons for 1948:

Stanley S. Atkins.....	Asheville
J. Samuel Blair	Gastonia
John P. Bond	Gastonia
Everett I. Bugg, Jr.	Durham
John C. Burwell, Jr.	Greensboro
James H. Cherry	Asheville
James A. Crowell	Charlotte
William A. Farmer	Fayetteville
William A. Graham	Durham
Gabel G. Himmelwright	Washington
Maurice L. LeBauer	Greensboro
J. Walter Neal	Raleigh
Robert T. Odom	Winston-Salem
Zack D. Owens	Elizabeth City
William L. Patman	Greensboro
Hubert C. Patterson	Durham
Ralph J. Plyler	Salisbury
John F. Register	Greensboro
Horace G. Strickland	Greensboro
J. Dent Summers	Hickory
Thomas D. Tyson, Jr.	High Point
James D. Whaley	Hickory
Claude T. Whittington	Greensboro

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Dr. Robert L. Vann has opened offices for the general practice of medicine in Statesville.

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Dr. Kenneth M. Cheek has begun the practice of internal medicine in High Point.

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Dr. J. A. Smith of Lexington and Dr. Ambler Speight of Rocky Mount have announced their retirement from practice.

CORRECTIONS FOR THE DIRECTORY

The following corrections should be made in the alphabetical list and roster of fellows which appeared in the supplement to the August issue:

Dr. J. D. Dowling, Jr., of Mount Olive—School should be listed as Washington University instead of George Washington University.

Dr. Preston Nowlin of Charlotte—Specialty should be U rather than S.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC.

Postgraduate fellowships in the fields of research, physical medicine, and public health are now available through the National Foundation for Infantile Paralysis. Application may be made to the National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York, at any time during the year. Selection of candidates will be made on a competitive basis by committees composed of specialists in each field. Awards are based on the individual need of each applicant.

ATLANTA GRADUATE MEDICAL ASSEMBLY

The annual Atlanta Graduate Medical Assembly will be held in Atlanta, Georgia, January 24-26. A list of speakers and full information concerning registration and hotel reservations appear in the advertising section. Drs. E. C. Hamblen and Walter Kempner of the Duke University School of Medicine are among the guest speakers.

NEWS NOTES FROM THE AMERICAN MEDICAL ASSOCIATION

Medical Public Relations Conference

Two hundred and forty medical public relations leaders from all parts of the United States packed the sessions of the first National Medical Public Relations Conference, which was held during the Interim Session of the American Medical Association ending December 3. The theme of the conference, which was sponsored by the A.M.A., was "Common Targets in Medical Public Relations." Representatives from state medical associations in forty-three states and Hawaii attended. They included presidents, executive secretaries, public relations directors, and chairmen of public relations committees.

AMERICAN COLLEGE OF SURGEONS

At the annual meeting of the Governors and Fellows of the American College of Surgeons held in the Ballroom of The Biltmore Hotel in Los Angeles on Thursday, October 21, 1948, the following officers were elected for the term 1949-50: president, Frederick A. Coller, Ann Arbor, Michigan; first vice president, Donald G. Tollefson, Los Angeles; second vice president, Robert M. Moore, Galveston.

AMERICAN NURSES' ASSOCIATION

At the request of the National Security Resources Board, charged with advising the President concerning the coordination of military, industrial and civilian mobilization in the event of a national emergency, the American Nurses' Association will direct a complete inventory of all professional registered nurses in the United States and its territories.

INTERNATIONAL CONGRESS ON RHEUMATIC DISEASES

The Seventh International Congress on Rheumatic Diseases will be held in New York City, May 30 through June 3, 1949, under the sponsorship of the International League against Rheumatism. The host is the American Rheumatism Association, assisted by the New York Rheumatism Association. The Congress will be the first International Congress on Rheumatic Diseases to be held in the United States.

The invited guests will be the members of the International League, the European League and Pan American League against Rheumatism with their constituent organizations, the Canadian Rheumatism Association, the British Empire Rheumatism Council, The Heberden Society of London, and the ten state or civic Rheumatism Societies affiliated with the American Rheumatism Association and certain other individuals.

Plenary sessions will be held at the Hotel Waldorf-Astoria, Headquarters of the Congress, at which sessions will be presented discussions of certain fundamental and clinical topics related to rheumatology.

NATIONAL GASTROENTEROLOGICAL ASSOCIATION 1949 AWARD CONTEST

The National Gastroenterological Association again takes pleasure in announcing its Annual Cash Prize Award Contest for 1949. One hundred dollars and a certificate of merit will be given for the best unpublished contribution on gastroenterology or allied subjects. Certificates will also be awarded those physicians whose contributions are deemed worthy.

The winning contribution will be selected by a board of impartial judges. The Association reserves the exclusive right of publishing the winning contribution, and those receiving certificates of merit, in its official publication, *The Review of Gastroenterology*.

All entries for the 1949 prize should be limited to 5,000 words, be typewritten in English, prepared in manuscript form, submitted in five copies accompanied by an entry letter, and must be received not later than April 1, 1949. Entries should be addressed to the National Gastroenterological Association, 1819 Broadway, New York 23, N. Y.

MISSISSIPPI VALLEY MEDICAL SOCIETY 1949 ESSAY CONTEST

The Ninth Annual Essay Contest of the Mississippi Valley Medical Society will be held in 1949. The Society will offer a cash prize of \$100.00, a gold medal and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics and education) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best. Contestants must be members of the American Medical Association who are residents and citizens of the United States. The winner will be invited to present his contribution before the Fourteenth Annual Meeting of the Mississippi Valley Medical Society to be held in St. Louis, Mo., Sept. 28, 29, 30, 1949, the Society reserving the exclusive right to publish the essay first in its official publication—the *Mississippi Valley Medical Journal* (incorporating the *Radiologic Review*). All contributions shall be typewritten in English in manuscript form, submitted in five copies, not to exceed 5000 words, and must be received not later than May 1, 1949. The winning essays in the 1948 contest appear in the January 1949 issue of the *Mississippi Valley Medical Journal* (Quincy, Illinois).

Further details may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Illinois.

Ciba Award

The Ciba award for meritorious work in endocrinology will again be offered in 1949. This Ciba award will be given in recognition of the accomplishment of an investigator, not over 35 years of age, in the field of clinical or preclinical endocrinology.

The Ciba award is for \$1,200.00. If within two years of the date of the award the recipient chooses to use it to aid in working in a laboratory other than the one in which he is normally located, the award will be increased to \$1,800.00.

Classified Advertisements

GENERAL PRACTITIONER WANTED

WANTED: General practitioner for North Carolina Mountain resort with wide opportunities for recreation, hunting, fishing. Minimum guarantee \$5400 annually with a good opportunity to increase the guarantee. Fully equipped four room office with all utilities furnished, rent free. Modern three bedroom electrically heated house rent free. Applicants should have North Carolina license or be eligible for reciprocity. Please give full details concerning age, professional background, etc., in first reply.

Address inquiries to: O. A. Fetch, Resident Manager, Fontana Dam, North Carolina.

WANTED . . .

RESIDENT PHYSICIAN

Resident physician wanted for private sanitarium located in Orangeburg, S. C. Experience in psychiatry preferred. Must be able to furnish good references or do not apply.

If interested write

P. O. BOX 765
ORANGEBURG, S. C.

Dihydrostreptomycin, the new drug which produces significantly less nerve damage than streptomycin, of which it is a derivative, is now available to the medical profession on a nation-wide basis, it was announced recently by Carleton H. Palmer, chairman of the Board of E. R. Squibb & Sons. This announcement followed publication of the official notification in the Federal Register through the U.S. Food and Drug Administration and an announcement by the editor of the *American Review of Tuberculosis* summarizing the papers of leading clinicians to appear in the November issue of that journal. Dihydrostreptomycin is available at no increase in price over forms of streptomycin hitherto available.

Papers by Dr. H. Corwin Hinshaw of Mayo, president of the American Trudeau Society, and Dr. Lawrence B. Hobson of New York-Cornell Medical Center conclude that dihydrostreptomycin seems to be as effective as streptomycin and has an advantage over the parent drug in that it can be tolerated longer by the patient before toxic manifestations become apparent.

AUXILIARY

CHRISTMAS LETTER FROM MRS. MCCAIN

Dear Auxiliary Friends:

May each of you and all your family have a good Yuletide Season! I wish that it were possible for me to get to say a word in person on Christmas morning. (We have a friend who calls over "long distance" every Christmas morning—and how heart warming is that greeting!) Since such a thing isn't possible, our Publicity Chairman, Mary Kennedy, is letting me say it through the JOURNAL. An especially warm greeting goes to the younger ones of the Auxiliary. We hope that you all will not be so busy that you do not take time to enjoy *to the fullest* the companionship of your fine doctor and your precious little ones, for the time will come when the circle will be broken and the little ones away from the home nest! Just here the Auxiliary wants Buren Sidbury to know that we shall be thinking of him as he goes through the first Christmas in many, many years without our dear Willie.

To those of us who may have a lonelier Christmas than in former years, we can say God has given us memories which as we grow older may become dimmer as to present things but clearer as to the past, so that we can have a happy Christmas thinking of years before the circle was broken. Too, we can get out and do something for others—a thing that is of prime importance to the profession which is so dear to us and with which we have so happily been associated for many years. God is good to all of us. May we show him our gratitude by celebrating the birth of his Son in a proper manner.

My love to each of you,
Sadie

The doctor's obligation as a citizen.—Members of the medical profession too often have neglected their obligations as citizens. Their understanding of human relationships fits physicians for participation in the formulation of policies to create a more stable society. In a sick world all of society's resources need to be mobilized for its own protection. Medicine has so much to offer. It aims to produce a wide base of support to each human need. It hopes to establish deep wells of comfort for troubled minds. It aspires to help people meet their daily problems with strong bodies, clear minds, and stout hearts. Physicians must be expert in the art of human relations.—Edward L. Bortz: Medical Statesmanship, M. Ann. District of Columbia 16:651 (Dec.) 1947.

BOOK REVIEWS

Psychiatry in General Practice. By Melvin W. Thorner, M.D., D.Sc., Assistant Professor of Neurology, The Graduate School of Medicine, University of Pennsylvania. 659 pages. Price, \$8.00. Philadelphia and London: W. B. Saunders Company, 1948.

This book perhaps deserves the overworked adjective, "unique." It is unique in that a psychiatrist writes about his subject in plain, everyday language which any physician—indeed, even an intelligent layman—can readily understand. Instead of using such terms as "schizophrenia," "merergasia," or "cyclothymic personality," the author speaks of intelligent people, dull people, unhappy people, confused people, dreamy, anxious, suspicious people. Every type of mental disease is illustrated by actual case histories which are as interesting as the average popular magazine story—often more interesting. One of the best chapters is called "The Rest of Us." This chapter contains just what the name implies.

Section 1 describes the plan of the book; Section 2—by far the longest—deals with "The People"; Section 3 discusses "The Methods" (history and examination and treatment). The final brief section takes up the classification of mental disease and commitment procedures.

The author is to be congratulated on having, as Dr. C. C. Burlingame says in the Foreword, "to an astonishing degree . . . overcome the psychiatric language barrier." The book can be heartily recommended to general practitioners and to all medical men who want to learn about psychiatry, and to learn as easily as possible.

ANA Public Relations Workshop, published by the American Nurses' Association, Inc., and written by Edward L. Bernays, Counsel on Public Relations. 32 pages. Price, \$2.50. New York: American Nurses' Association, 1948.

This excellent manual on public relations should be of great help to any professional group in their organization of a public relations program. It is written more or less in outline form, with many illustrations.

The first part, entitled, "What Public Relations Is," discusses the main principles of public relations and describes its objectives. It is based, of course, on the requirements of the American Nurses' Association, but is broad enough to be fitted to any professional public relations program. The rest of the manual is devoted to professional advice on establishing contact with the public through the various mediums—namely, the press, the radio, the movies, the mail by pamphlets, and the spoken word in forum discussions and meetings. The last chapter, "Your Community Blueprint," is a discussion of the many things necessary for a public relations program to consider about individual communities, particularly as to community groupings and community attitudes on the subjects in question.

The author is obviously an experienced and well qualified public relations counselor, with a keen sense of analysis.

CORRECTION

The price of Selye's **Textbook of Endocrinology**, which was reviewed in last month's issue, was erroneously quoted as \$10.25. This was the prepublication price, which is no longer in existence. The present price of the book is \$12.80.

Unipolar Lead Electrocardiography. By Emanuel Goldberger, M.D. 182 pages. Price, \$4.00. Philadelphia: Lea & Febiger, 1947.

The author of this text is one of the most competent and best known exponents of unipolar electrocardiography. This volume presents an adequate, clear, and concise discussion of the subject. It is probable that the principles of unipolar leads will become more and more popular, and possible that this principle of recording the electrocardiogram may be made a standardized procedure in the future. It is true that this type of electrocardiogram is useful in detecting right or left ventricular hypertrophy and changes in the position of the heart. However, it will be necessary for those uninitiated in unipolar lead electrocardiography to be diligent in comparing this type of electrocardiographic tracing with the old standard limb leads for some time in order to become conversant with the differences that exist, especially in the Q waves.

This book is recommended for those interested in unipolar electrocardiography.

Illustrative Electrocardiography. By Julius Burstein, M.D. and Nathan Bloom, M.D. Ed. 3. 309 pages. Price, \$6.00. New York: D. Appleton-Century Company, 1948.

Since the purpose of textbooks is to teach, whether at the student level or at the level of the practitioner of medicine, it seems important that textbooks of electrocardiography should provide adequate clinical correlation with the electrocardiographic findings. In this text the correlation could hardly be considered adequate. The effects of digitalis on the electrocardiogram are described, but the statement is also made that the electrocardiogram is an index of digitalization and may indicate that administration of the drug should be discontinued. As a matter of fact, however, the clinical criteria for digitalization should be given far more weight than the electrocardiographic findings. No mention is made of the effect of quinidine, potassium, or hypoglycemia.

There are numerous artefacts in many of the illustrations, a number of which are not at all clear. An example is the illustration of complete heart block, which is adequate for one well versed in electrocardiography but might be somewhat difficult for the student.

It is rather unusual to find in a textbook of electrocardiography a section devoted to x-ray studies of the heart. This, of course, is a field entirely separate and worthy of an even larger volume than this one. The term "mitral lesion" appears in some of the captions describing x-ray films. This probably means mitral stenosis.

The arrangement of this text is very good. The book is nicely bound and printed on good paper. The addition of more adequate clinical data would add greatly to the value of the text.

The Case Against Socialized Medicine. By Lawrence Sullivan. 53 pages. Price, \$1.50. Washington: The Statesman Press, 1948.

In this little book Mr. Sullivan, a veteran Washington correspondent, sums up the weaknesses of national health insurance and, as stated on the cover, "tells what happens to the health of a nation when village doctors are selected like postmasters." As a concrete example of what might be expected under bureaucratic control, Mr. Sullivan reminds us that in the heyday of the WPA, "a WPA administrative assistant in West Virginia wrote to one of his county administrators:

"I hand you herewith a list of doctors in Ohio County. Kindly separate the Democrats from the Republicans and list them in order of priority, so that we may notify our safety foremen and compensation men as to who is eligible to participate in cases of injury."

"Later, the county lists were compiled for the entire State, in State headquarters of the WPA. They then were mailed to the county safety foremen under the notation: 'Democratic doctors listed on the left hand side, and Republicans on the right.'"

It is to be hoped that this little volume will have as wide a circulation as Mr. Oscar Ewing's report to the President on "The Nation's Health," which will undoubtedly be used as a handbook in the campaign to force a national health insurance act through the next Congress.

In Memoriam

ALEXANDER H. STEVENS, JR., M.D.

Dr. Alexander H. Stevens, Jr., was born in Monetta, South Carolina, in 1905. He received his B.S. in Pharmacy at the University of South Carolina in 1926 and his M.D. at the University of Georgia in 1932. After his internship at the James Walker Memorial Hospital in Wilmington, N. C., he did general practice in Farmville until 1935, when he went to the Eye, Ear, Nose and Throat Hospital of New Orleans, Louisiana, for study in that specialty. From 1941 to 1946 he saw active duty with the United States Navy, holding the rank of commander at his discharge. After his release from the Navy he practiced his specialty of ophthalmology and otolaryngology in New Bern until October 21, 1948, when he was killed in an automobile accident.

At the time of his death Dr. Stevens was president of the Craven County Medical Society. He was a member of the First Presbyterian Church of New Bern, a Rotarian, Elk, member of the American Legion, Veterans of Foreign Wars, Yacht Club, Naval Reserve, and chief of the eye, ear, nose and throat service of St. Luke's Hospital in New Bern. He is survived by his wife and by his mother and father.

Dr. Stevens was well liked by all who knew him, and highly esteemed by his associates in medicine. His death was a great loss to the community and he will be missed greatly, not only for his services to the community but for his genial personality, his friendly smile, and the spirit of good fellowship that always followed him.

At a meeting of the Craven County Medical Society on Wednesday, November 3, 1948, the following resolutions were adopted:

WHEREAS it has pleased almighty God in His infinite wisdom to call from the sphere of his earthly activities Dr. Alexander H. Stevens, Jr., and

WHEREAS the Craven County Medical Society is deeply conscious of the loss to them as individuals and as a body in the passing of this valued member,

BE IT RESOLVED: That high tribute be paid by the Society to him as a physician, as a loyal co-worker, and as a faithful citizen whose death has saddened his associates and his many friends, and

BE IT FURTHER RESOLVED: That a copy of these resolutions be inscribed on the permanent records of the Society and a copy be sent to his family and to the press.

Committee on Resolutions
C. S. Barker, M.D.
F. M. Grady, M.D.

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KEY TO ABBREVIATIONS

Aux—Auxiliary
C Correspondence
CPC—Clinic pathologic Conference
ML—Medicolegal Abstract

MW Maternal Welfare Committee
PR Public Relations
TS Chapters in the History of
Thoracic Surgery

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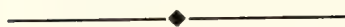
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Child Health Services in North Carolina



Report of
The American Academy of Pediatrics
Study of Child Health Services
in North Carolina



Supplement to the North Carolina
Medical Journal, April, 1948

North Carolina Study of Child Health Services

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FOREWORD

This report of child health services in North Carolina is the spear-head of a nation-wide study which has been in progress for nearly three years under the direction of the American Academy of Pediatrics, with the cooperation of the U. S. Children's Bureau and the U. S. Public Health Service. The study was conceived in September 1944, when members of the American Pediatric Society expressed their belief that physicians should assume greater responsibility in planning for the medical care of children. A committee, representing the American Academy of Pediatrics, the American Pediatric Society, and the Maternal and Child Health Advisory Committee of the U. S. Children's Bureau, prepared a report, which was unanimously accepted by the members of the Academy at their meeting in November 1944,¹ thus committing them to the following objective: *"To make available to all mothers and children of the United States all essential preventive, diagnostic and curative medical services of high quality which, used in cooperation with other services for children, will make this country an ideal place for children to grow into responsible citizens."*

At the outset it was realized that data needed for planning were incomplete, scattered, and in some fields totally lacking. Hence, the Academy undertook a nation-wide study to determine existing facilities and services for medical and health care of children. North Carolina was recommended as the "pilot" State in which the procedures could be tried out and perfected. The North Carolina Pediatric Society, at its annual meeting at Roaring Gap in 1945, was requested to undertake the responsibility for this "pilot" study, a serious responsibility involving considerable time and effort from each of its members. The Society voted unanimously in favor of complying with the request, and the study was launched immediately in this State. This document is a report of the results of this fact-finding study.

The factual part of the report was prepared jointly with the central executive staff of the Study of Child Health Services. However, the North Carolina Pediatric Society, together with others concerned with the health of the children in this State, has sole responsibility for the recommendations drawn up to meet the needs revealed by the facts.

Thanks are due to the State Board of Health, especially to Dr. C. V. Reynolds, State Health Officer, and Dr. G. M. Cooper, Assistant State Health Officer, for their help with the study and for making available personnel and office space and equipment. Other expenses, met by contributions from county chapters of the National Foundation for Infantile Paralysis, are gratefully acknowledged.²

The following additional organizations have given continuing support: Board of Public Welfare, Medical Society, Dental Society, Tuberculosis Association, Federation of Women's Clubs, Congress of Parents and Teachers, Society for Crippled Children, and Hospital Saving Association.

The thanks of the North Carolina Pediatric Society are expressed to Dr. Warren R. Sisson and the Academy committee of which he is chairman, for their confidence in selecting North Carolina as the "pilot" State and for their guidance and continuing interest; to Dr. John P. Hubbard, Director of the study; to the U. S. Public Health Service for the loan of the two State executive secretaries; and to the central executive staff, particularly Dr. Katherine Bain, Dr. Charles L. Williams, Jr., Mr. Rollo H. Britten, and Mrs. Maryland Y. Pennell who have assisted in the preparation of this report.

ARTHUR H. LONDON, JR.

1. *J. Pediatrics* 25:625 (Dec.) 1944.

2. At the national level the U. S. Children's Bureau and U. S. Public Health Service have contributed the full-time services of medical and statistical personnel, office space, and equipment. The study has been financed from the limited reserve fund of the Academy, with generous financial contributions from the National Foundation for Infantile Paralysis, the National Institute of Health (research grant), the Field Foundation, and a number of commercial firms.

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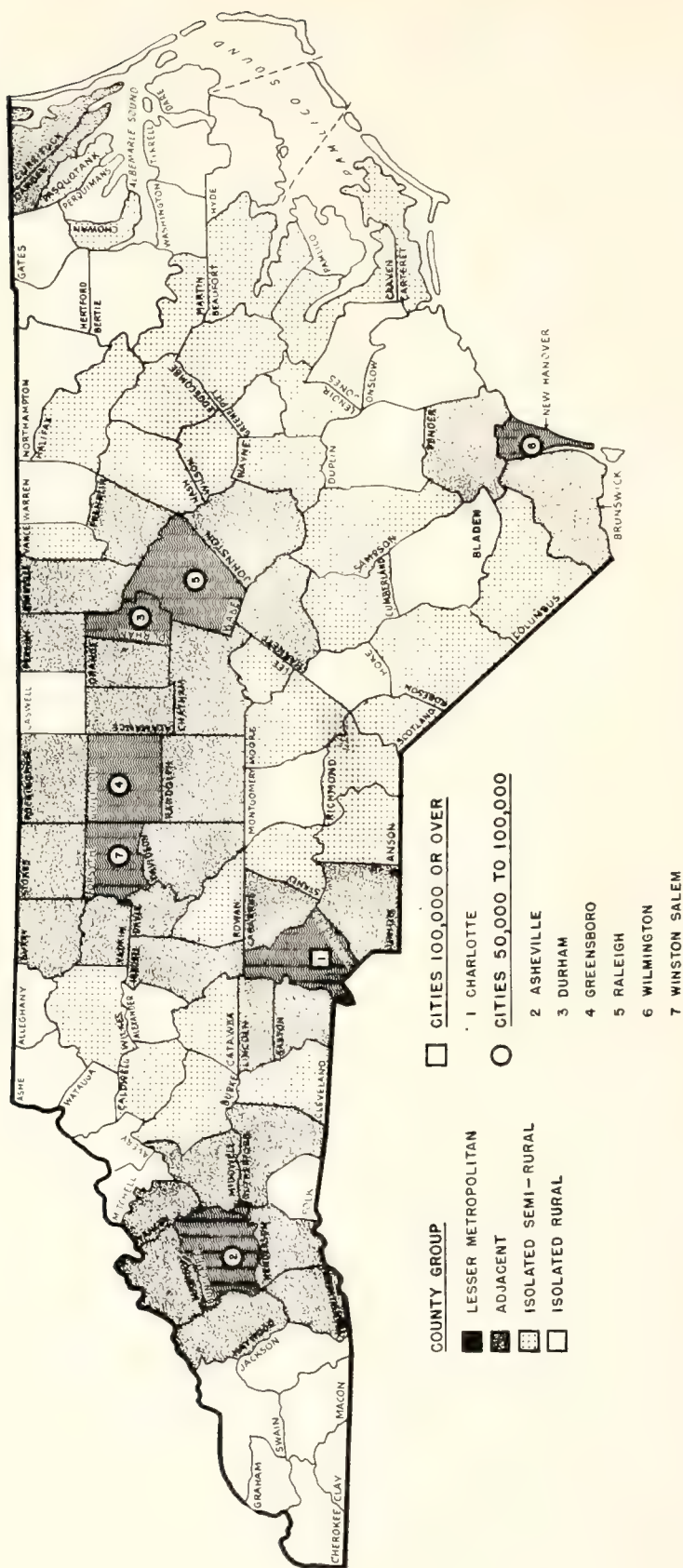


Fig. 1. County groups in North Carolina.

CHAPTER I—INTRODUCTION

This fact-finding study was set up to collect data on facilities and services currently available for the health and medical care of children within the State. The sources of this information were: (a) physicians and dentists; (b) voluntary and official community health agencies; and (c) all hospitals admitting children or maternity cases.³

Corresponding to these three categories of information, 18 different schedules were prepared by the central staff of the study. Some of the schedules were designed as mail questionnaires. Others, requiring a field visit, were completed through personal visits by the executive secretary, field staff, and the pediatricians themselves. At the outset, the executive secretary traveled throughout the state, called upon each member of the Pediatric Society and explained to each his share in the study. These contacts were made in accordance with the original policy, which was based on the premise that those who are active in rendering child care should share not only in future planning but also in the collection of the data required to establish a sound basis for the improvement of child health services. Each member of the Society was therefore asked (a) to fill out his own schedule accurately and completely, (b) to assist in obtaining information from hospitals, (c) to cooperate with the local health officers in collecting the data related to community health services, and (d) to contact general practitioners and specialists in his vicinity in order to assure a maximum response. The participation of the medical profession, particularly those recognized within their own communities as specialists in child care, can be considered largely responsible for the gratifying response to the questionnaires.

The study in North Carolina was necessarily complicated by the fact that it was the "pilot" State. Methods and techniques had to be evolved during the course of the study. When the schedule forms used in the early phases were examined in the Central Office, it was clear that some needed extensive revision. Certain questions were deleted or revised; others were added. The revised schedules were then redistributed. The original physicians' schedules were first mailed

out during December 1945; the final corrected forms were distributed during the following May. The schedules which were ultimately used in North Carolina were the same as those used in all other States so that the information available for the "pilot" State can be considered consistent for comparison elsewhere.

The record of physicians' visits was obtained for a single day, one seventh of the physicians reporting for each of the days in the week. Correction was made for the season in which the study was conducted. For non-reporting physicians, adjustment was made on the basis of a special study in four States; hence, unless otherwise indicated, the figures represent services for all practitioners in the State or specified area. The records for pediatricians covered 28 days. Schedules for community health services and hospitals covered one year.

Because of the absence of any adequate population data for the year of the study, special estimates of child population⁴ as of July 1, 1945, were made for each county. (Appendix Table A)⁵

It is to be emphasized that most of the data obtained, especially those which can be expressed in terms of rates per 1,000 children, are measures of quantity of service, rather than quality. Since deficiencies in amount of service are likely to be associated with a lower quality of care, the comparisons in this report tend to underestimate the real disparities.

Comparison with Other States

At the time this report was prepared, the data for all the States had not been tabulated. Several States have therefore been selected to form a fairly representative group and have been used as a basis for comparisons with North Carolina.

In the selection, an attempt has been made to obtain an approximate sample of the whole country based upon such considerations as geographic location, size of State, per capita income, population distribution between metropolitan and rural counties, and the relative number of available phy-

4. In this report "children" unless otherwise qualified, refers to persons under 15 years of age, including newborn.

5. Population under 5 years of age was estimated on the basis of the number of births for each of the five calendar years 1940 through 1944. Survival rates for each year of age were applied to the number of births occurring in each of the years and adjustment was made for under-registration of births. The number of children age 5-14 years was estimated for each county on the basis of changes in school enrollment. The ratio of elementary public day school enrollment for 1945 to that for 1940 was used to project to 1945 the 1940 census population in the age group 5-14 for each county. In both cases the figures for all states were adjusted to total to the estimated population of the entire United States for the specific age group for July 1, 1945.

3. In order to produce a report brief enough for practical use in the State, a large mass of data collected in the course of the study has necessarily been referred to only briefly or omitted entirely. Fuller details are available on application to the State Chairman of the Academy. The national report of the study will take up broad aspects of the data which cannot be adequately covered for a single state because of small numbers.

sicians, dentists and hospital beds. Although this group of States may be said to represent "a little United States," it is not a true sample in the strict sense of the word because the selection was conditioned by the necessity of having to exclude States that had not yet finished collecting their data at the time the sample was chosen.

The States selected are: Oregon, Montana, New Mexico, Illinois, Alabama, North Carolina, New Hampshire, and a new "State" which has been "admitted to the Union" for this purpose, composed of Maryland, the District of Columbia, and two counties of Virginia.⁶ These eight selected States contain about five and one-half million children or approximately 15 per cent of the Nation's children.

In addition to comparisons with the selected States as a group, it has been found desirable to show the values also of the highest and the lowest of the eight States for a particular item, as an indication of what has been accomplished under favorable conditions and the range from state to state in amount of services for children.

Comparisons Within North Carolina

One of the primary purposes of the study has been to determine the distribution of health and medical services for children in

order that existing inequalities in North Carolina might be defined in specific terms. Hence, counties have been grouped to bring out contrasts between densely populated urban centers and isolated counties (Fig 1).

The usual classification of urban-rural is not satisfactory, since people cross county lines to obtain medical care in nearby centers. Counties have therefore been grouped together on the basis of two fundamental characteristics: (a) population density; and (b) proximity to densely populated areas. In this way, separate consideration is given to counties which, although they themselves may be sparsely populated, are nevertheless relatively close to metropolitan counties and the medical facilities there available. Under this classification, *metropolitan counties* are those which include the metropolitan districts of cities of 50,000 or more population. Counties which are geographically contiguous to any of the metropolitan counties are classified as *adjacent*. Counties that do not touch any part of a metropolitan county have been termed *isolated*, and subdivided into those with an incorporated place of 2,500 or more population (semi-rural) and those without such a place (rural).⁷

6. This new "State" was devised primarily for presenting hospital data, since facilities in the District of Columbia serve the surrounding counties.

7. For a more detailed description of the classification by county group, see Hubbard, John P.; Pennell, Maryland Y.; and Britten, Rollo H.: Health Services for the Rural Child—Availability of Hospitals, Physicians, and Dentists in Service Areas. Submitted for publication in J.A.M.A.

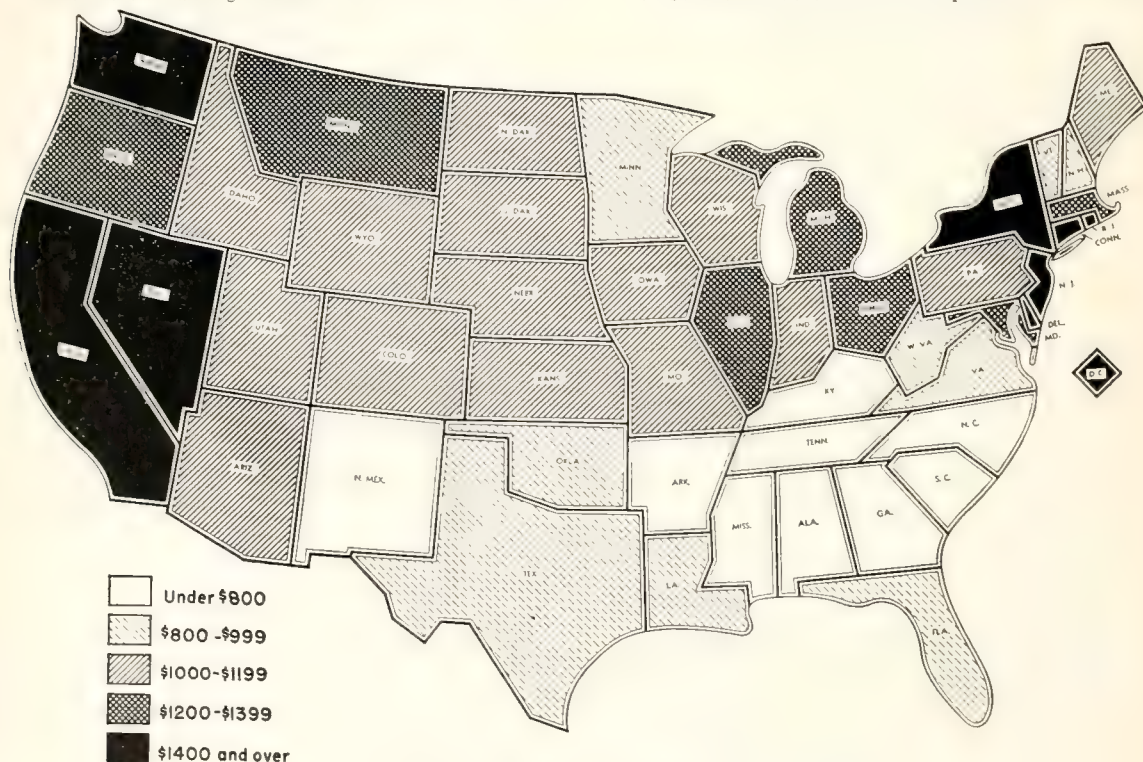


Fig. 2. Per capita effective buying power, by state.

The Economic and Health Setting of the Child

The financial capacity of North Carolina, as compared with other States, is low. The income of \$703 per person is exceeded by 43 states.⁸ Fig. 2 shows that, from a geographic point of view, North Carolina is one of a group of low income States. Among the eight States which have been selected as a basis for comparison of child health services in this report, North Carolina ranks seventh in per capita income.

Comparison of figs. 1 and 7 will show a rather close correlation between classification of the counties according to income and according to the county groups discussed in the preceding section. However, adjacent counties, which tend to be low in the economic scale, are near medical centers and are relatively better off from a medical service point of view than their economic level would indicate.

In North Carolina a comparatively large proportion of the population are children. The percentage (36.3 in 1945) is the fifth highest in the country and the third highest among the eight selected States. Nineteen per cent of the children were in metropolitan counties, 29 per cent in adjacent counties, 37 per cent in isolated semi-rural, and 15 per cent in isolated rural.

The State's death rate during 1940⁹ was the twelfth highest of all the States and the fourth highest among the eight selected States.

During 1945, 43 out of every 1,000 children born alive in North Carolina died during the first year of life. The rate was fourteenth highest among all the States and the third highest among the eight selected States. Nonwhite infant mortality in North Carolina was about 50 per cent higher than the rate for white infants (55 as against 37). Fig. 3 shows that considerable improvement in the protection of the newborn infant has been made. In 1917 almost 100 out of every 1,000 children born alive died during the first year of life. This proportion in 1945 was half as large.

During 1945, three mothers died for every 1,000 babies born alive. This rate was the tenth highest in the country and the third

highest among the eight selected States. The nonwhite rate was more than twice as high as the rate for white mothers. Fig. 3 shows a great decrease in the maternal death rate since 1917.

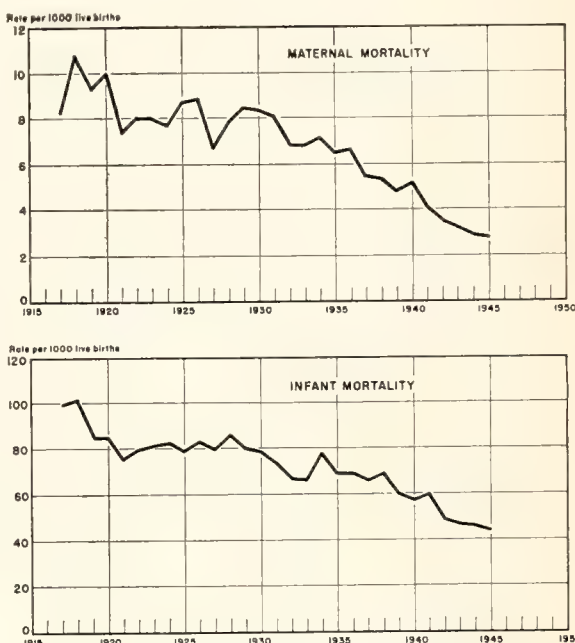


Fig. 3. Trend of infant and maternal mortality, North Carolina, 1917-45

During 1945, 55 per cent of births occurred in hospitals, placing the State in the low position of fortieth among all the States and as seventh among the eight selected States. In North Carolina's metropolitan and adjacent counties, the per cent born in hospitals was 67; in isolated counties, 44. Although almost three-fourths of the white babies were born in hospitals, only one-fourth of the nonwhite children were born in hospitals. The percentage of births in hospitals has been increasing from year to year for both white and nonwhite, and it can be expected that this trend will continue.

The comparatively low rank of North Carolina for economic and health indices is not limited to those mentioned here. The report of the North Carolina Hospital and Medical Care Commission¹⁰ showed that the State ranked low for many other health indices. Another study has indicated that, after grouping a number of health and sanitation factors, North Carolina ranks forty-third among the States.¹¹

8. Calculated from estimates of income made by Sales Management for 1944-46. Sales Management, Vol. 54, No. 10, May 15, 1945 and corresponding issues 1946 and 1947. Copyright 1947, Sales Management, Inc.; further reproduction not licensed.

9. The rates were adjusted to the age composition of the entire country, 1940 data are used since that is the last year for which population data by age are available.

10. Hospital and Medical Care for All Our People. Reports of the Chairmen and sub-committees of the North Carolina Hospital and Medical Care Commission, 1944-45.

11. Hirschfeld, G., and Strow, C. W., Comparative Health Factors Among the States, Am. Soc. Rev. 11:42 (Feb.) 1946.

CHAPTER II—TOTAL VOLUME OF CHILD HEALTH SERVICES

A. MEDICAL CARE

Although no yardstick of the amount of care which children need is available at present, it has seemed profitable to examine the amount of care they are now receiving. A composite picture of the total volume of medical care on one day has been obtained by adding together the medical care (expressed as visits or hospital days¹²) rendered to children: (a) in private practice (office and home); (b) in clinics and conferences¹³; and (c) in hospitals.¹⁴ This summation represents the total number of children under medical care on one day, and when related to the child population, gives a useful index of the total volume of medical care.

The primary purpose of a quantitative estimate of this type is to provide a means of making comparisons among States and between areas of differing population, geographic, and socio-economic characteristics. The areas in which children receive the greatest amount of care are not necessarily getting enough nor is the quality necessarily high. We have no standard which represents adequacy. These better supplied areas, however, do serve as a basis for comparison.¹⁵

Children in North Carolina receive on the average 42 per cent less medical care (as above defined) than those in the highest of the eight selected States.¹⁶ Fig. 4 compares this State with the highest, the average, and the lowest of the eight selected States in terms of total volume of medical care and its three components—private practice, clinics, and hospitals. This State is below the average for each of the three components.

Because persons living in counties classified in this study as "adjacent" frequently obtained hospital care from metropolitan counties, it has been found desirable to combine metropolitan and adjacent counties in presenting rates for total volume of medical care by county group. Isolated semi-rural and rural counties have also been combined. Therefore, two broad county groups have been used for comparisons of total volume of medical care.

Children in the isolated counties of North

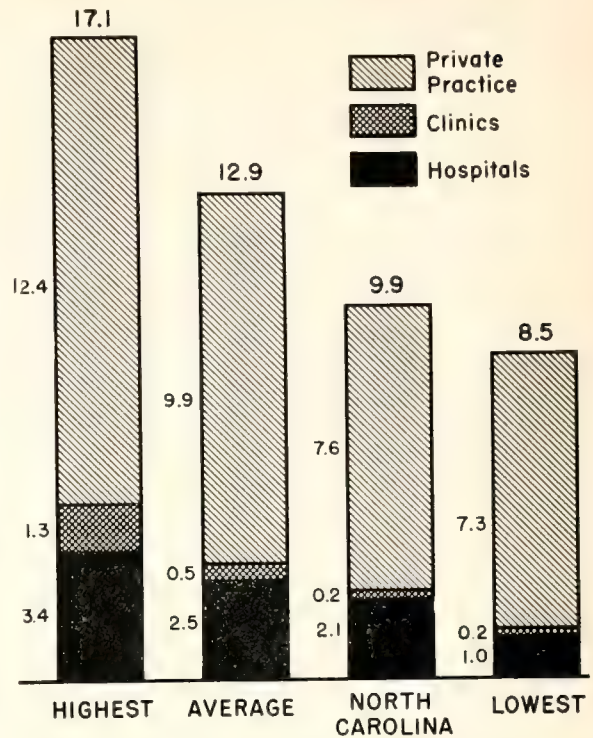


Fig. 4. Total volume of medical care for children on one day per 1,000 children in North Carolina, —comparison with eight selected states.

Carolina receive one-fifth less medical service than those in the metropolitan and adjacent counties,¹⁷ as shown in the following table:

	Number per 1,000 children per day			
	Total Children Under Medical Care	Visited by Physi- cians(a)	Visiting Clinics	In Hos- pitals
Metropolitan and adjacent counties	10.7	8.0	0.32	2.4
Isolated counties	8.8	7.2	0.22	1.4

(a) Office and home

What part of the total volume of medical care received by North Carolina children is for health supervision? Health supervision is made of two elements: visits to child health conferences and visits to physicians' offices.¹⁸ Of the total number of children under medical care (exclusive of newborn), one-sixth are under care for health supervision. More detailed descriptions of health supervision are given in following chapters.

Summary

A method has been developed to indicate the total volume of medical care received by children on an average day. Since equal

12. Since, for this purpose, equal weight is given to a physician's visit, a clinic visit, and a day of hospital care, it may be felt that the importance of hospital care has been underestimated in the figures for total volume.
 13. Out-patient departments, medical well-child conferences, mental hygiene clinics, and community health services for crippled children.
 14. Days of care in institutions for the feeble-minded are excluded.
 15. The assumption is made that the need for medical care, in terms of service per 1,000 children, is the same in different parts of the State and in the individual States with which comparison is made.
 16. See introduction for description of these eight States.

17. In comparison by county group, data for special hospitals and for mental hygiene and physically handicapped services are excluded.
 18. Hospital care, a part of total volume, was excluded from well-child care.

weight is given to a physician's visit, a clinic visit, and a day of hospital care, the important part that hospital care plays may have been minimized. Comparison is made with a group of eight States, including North Carolina, which are fairly representative of the United States.

1. On the assumption that, in the State with the highest rate, children are certainly not receiving too much medical care, children in North Carolina are deficient in volume of medical care by at least 40 per cent.

2. Children in metropolitan and adjacent counties receive considerably more care than do those in outlying counties.

3. Of the total number of children under medical care (exclusive of newborn), one-sixth were under care for health supervision.

B. DENTAL CARE

One child per 1,000 children was under dental care on one day in North Carolina. There was a wide difference in the level of such care in the eight States selected to serve as a representative sample of the country, ranging from a rate of 5.3 in the State with the highest value to 0.9 in the State with the lowest.

Dental clinic service was about one-tenth of the total volume of dental care in North Carolina; nevertheless with respect to such service the State ranked third among the eight:

	Children under dental care per 1,000 children on one day		
	Total	Private Practice	Dental Clinics
North Carolina	1.2	1.1	0.12
Eight States			
Highest	5.3	5.2	0.28
Average	3.1	3.0	0.12
Lowest	0.9	0.9	0.01

In the metropolitan and adjacent counties of North Carolina, the number of children under dental care on one day was 1.4 per 1,000 children, as against 1.1 in isolated counties. Dental clinic service in terms of visits was equally distributed in the two groups of counties.

Summary

1. The proportion of children under dental care in North Carolina is only about one-fourth that for the highest of the selected States.

2. Dental clinic service was not extensive enough to make up for the deficiency in private dental services.

CHAPTER III—HEALTH SUPERVISION

Within recent years the concept of continuing health supervision for well children has become accepted. Pediatricians receive training regarding normal growth and development, the feeding and care of well children, and the handling of the usual problems of social and emotional adjustment. General practitioners have assumed considerable responsibility in health supervision of children in their own private practice. Also, a fact of equal or perhaps greater importance, mothers themselves have become accustomed to looking to their physicians, whether pediatricians or general practitioners, for guidance in the preservation of their children's health.

The bulk of the child health supervision by private physicians in North Carolina is carried by general practitioners. Of the private physicians' visits for health supervision of children, 79 per cent were made by the general practitioners, 18 per cent by the pediatricians, and 3 per cent by other specialists.

Of the general practitioners' visits to children, 20 per cent are for health supervision;¹⁹ this proportion for the pediatrician is 36. Comparison of these percentages with the eight selected States follows:

EIGHT SELECTED STATES				
	North Carolina			
	Highest	Average	Lowest	
General practitioners	20	33	26	19
Pediatricians	36	61	54	33

Not all the continuing health supervision of children is given in the offices of private physicians. For a number of years public and private agencies have conducted child health conferences where infants and young children can receive health supervision by a physician at the community health center. In the following discussion this type of service has been combined with the health supervision given by the physician in his private practice. Since children attending well-child conferences usually range in age from one month to six years, the following comparisons are limited to these ages.²⁰

As shown in fig. 5 the number of children under health supervision on one day in North Carolina is about 3 per 1,000 children under 5 years of age—36 per cent of the rate for the highest State. The chart also indicates that the proportion of health supervision given in medical well-child conferences is small.

19. Including newborn.

20. Because of the age group used in Census data, the estimated population under 5 years of age is used in calculating the rates.

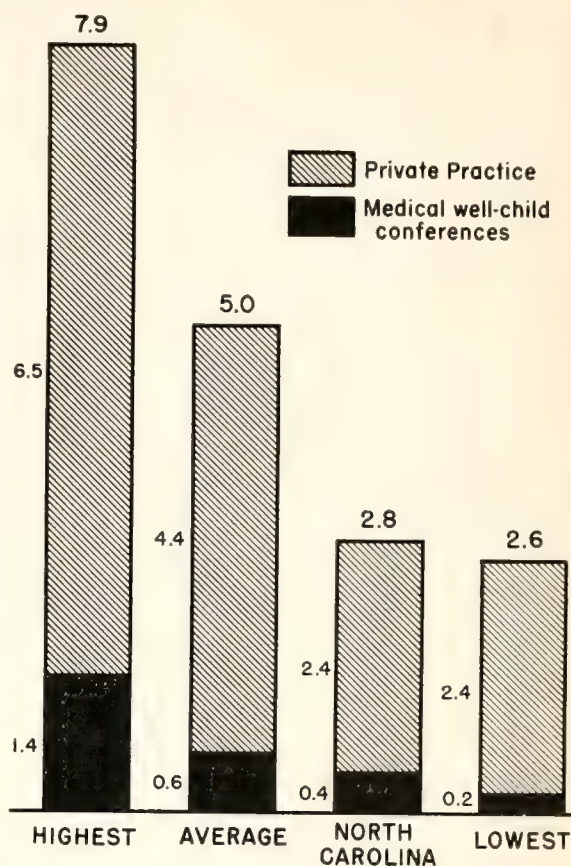


Fig. 5. Children receiving health supervision on one day per 1,000 children in North Carolina—comparison with eight selected states.

The differences in amount of health supervision as between county groups is indicated in the following figures:

	Number of Children per 1,000 Under 5	Ratio to rate in Metropolitan Counties
Metropolitan counties	4.4	---
Adjacent counties	2.3	0.52
Isolated semi-rural counties	2.8	0.64
Isolated rural counties	1.7	0.39

Summary

1. The bulk of the child health supervision by private physicians is carried by general practitioners.

2. Twenty per cent of the general practitioners' child visits in private practice and 36 per cent of the pediatricians' visits are for health supervision.

3. The rate of children under 5 years of age under health supervision (in private practice or clinics) on one day is one-third of that in the highest of the eight States.

4. The amount of health supervision was relatively much less in isolated than in metropolitan and adjacent counties.

CHAPTER IV—PRIVATE PRACTICE

A. PHYSICIANS

Number, Type and Training

In November, 1945,²¹ there were 1,587 physicians in private practice in North Carolina, a ratio of 764 children per physician. This ratio was the worst in the group of eight selected States, the best being 219 children per physician, and the average 338. Fig. 6 indicates the position of each of the selected States with respect to this ratio. The ratio of the number of children per physician, rather than the total population per physician, has been used to indicate relative accessibility of physicians to children.

Over half the counties in North Carolina had more than 1,000 children per physician, as shown in fig. 7. A close parallel is to be observed in the chart between the rate of physicians in different counties and the economic position of these counties.

The number of children per physician in each of the four county groups was as follows:

	No. of Children per Physician	Actual No. of Physicians
Metropolitan	402	567
Adjacent	922	387
Isolated semi-rural	898	494
Isolated rural	1,325	139

21. It is realized that at the present time (February, 1948) the number of physicians in private practice is greater than at the time the study was made, but no estimate of the increase is possible. It is also to be noted that the study in North Carolina preceded that in other States by a few months.

The number of physicians in each county, classified as to type of practice, is shown in appendix table B.

Pediatricians—There were 39 physicians in North Carolina who reported that they limited their practice to children and who were accordingly classified as pediatricians, giving a ratio of 31,000 children per pediatrician. In the eight States this ratio varied from 5,300 to 31,000, with an average of 11,000. Of the 39 pediatricians in North Carolina, 23 had been certified by the American Board of Pediatrics.

All of the pediatricians had their offices in cities of 10,000 or more population. Thirty-four were in metropolitan and adjacent counties; 5 in isolated counties. Their distribution over the State is shown in Fig. 7. On the assumption that a distance of 25 miles may be taken as a limit of the pediatrician's ordinary range of practice, circles were drawn to indicate areas of the State not ordinarily covered by such practice. The chart also shows that the pediatricians tend to be located in the same cities with hospitals having children's units.

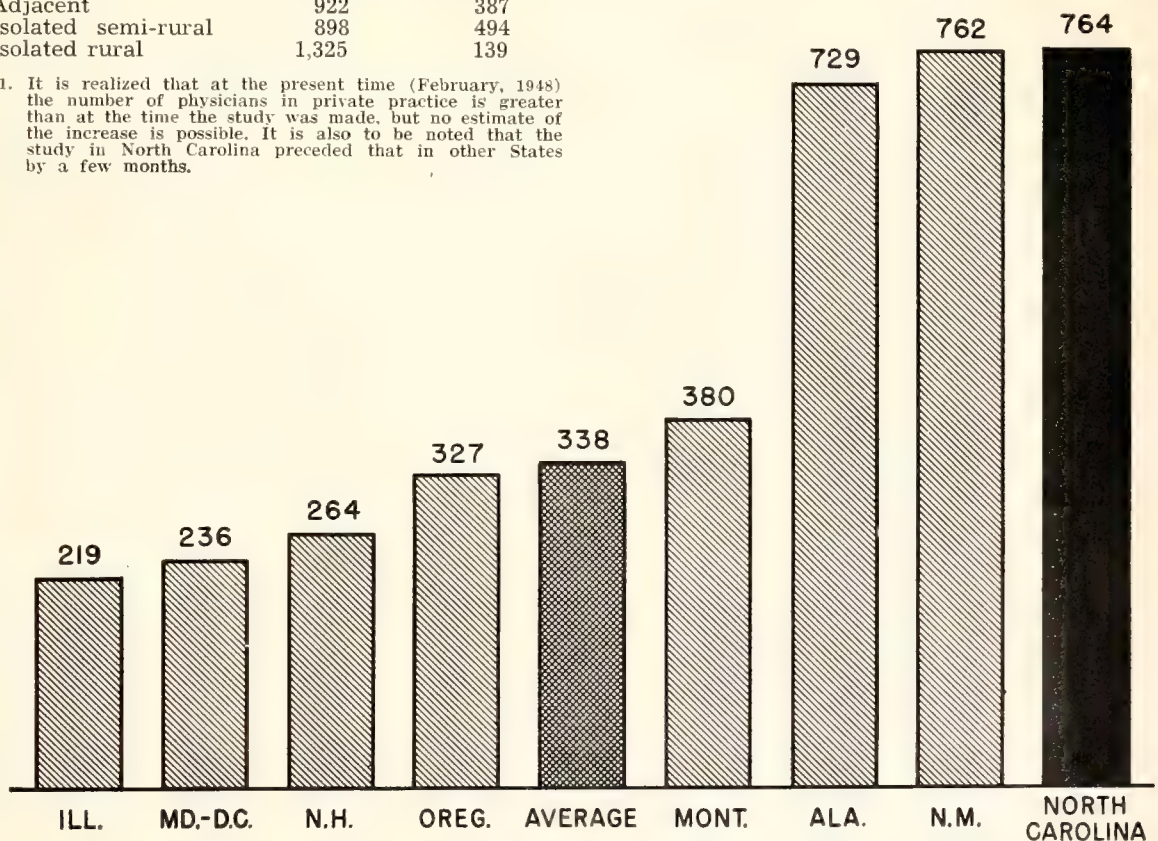
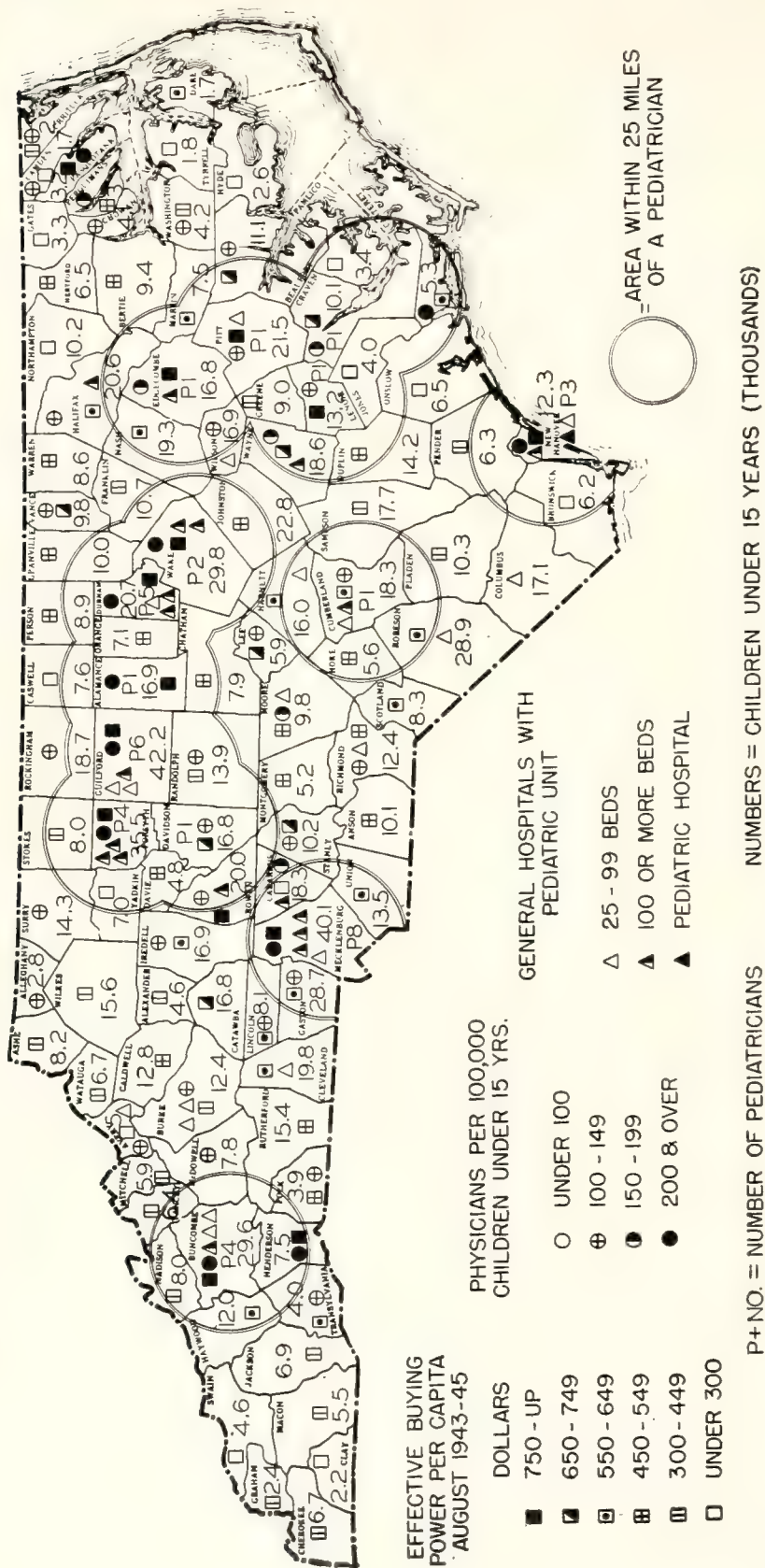


Fig. 6. Number of children per physician in eight selected states.



Other Specialists—There were 455 specialists other than pediatricians, most of whom were in general surgery or the surgical specialties. The number by type and certification is shown below:

	Total Number	Number Certified by American Specialty Boards
Internal medicine and allied specialties	96	33
Allergy	4	1
Psychiatry and neurology	9	5
Surgery, except orthopedic	161	41
Orthopedic surgery	10	9
Obstetrics and gynecology	44	16
Ophthalmology and otolaryngology	112	28
Radiology and anesthesiology	19	14

Training—Of 601 general practitioners who gave information as to the length of their hospital training, 16 per cent reported that they had received no hospital training at all and an additional 6 per cent that they had received less than one year. Only a third had received two or more years. As to hospital training specifically in pediatrics, two out of every five general practitioners had received none or less than one month.

Age, Sex, Race—Of the 1,587 physicians in private practice in North Carolina, 40 were women; 125 were nonwhite. Five of the 39 pediatricians were women; all were white. One-third of the physicians were under 45 years of age and one-half between 45 and 64 years.

Summary

1. North Carolina had a larger number of children per physician in private practice than any other of the eight States, and three and one-half times as many as the most favored of the eight States.

2. There was a marked difference in the ratio of children to physicians by county groups, especially for pediatricians and other specialists. Over half of the counties had 1,000 or more children per physician.

3. Children in a large part of the State are not within reach of the ordinary practice of pediatricians.

4. Two out of five general practitioners had received none or less than one month's training in pediatrics in a hospital.

Physicians' Services

In Chapter II, dealing with the Total Volume of Medical Care, the counties were necessarily combined into two groups. For comparisons of private practice, the four county groups may be considered separately. The amount of such care received by chil-

dren living in the isolated rural counties of North Carolina is 54 per cent of that received in the metropolitan counties of the state.

The deficiency in the various county groups of North Carolina in relation to the highest rate in the metropolitan-adjacent counties of the eight States is presented below. The proportion of the child population in each county group is also shown.

	Physicians' Visits per 1,000 Children (b)	Percentage of Child Population in each County Group
North Carolina	9.1	—
Metropolitan counties	11.5	18.8
Adjacent counties	9.0	29.4
Isolated semi-rural counties	9.3	36.6
Isolated rural counties	6.2	15.2
Highest of eight states (a)	15.8	—

(a) Metropolitan and adjacent counties only.
(b) Office, home, and hospital.

Proportion of Care Rendered by General Practitioners and Specialists—Most of the private physicians' care received by children in North Carolina is provided by the general practitioner (79 per cent). In the metropolitan counties, however, the proportion falls to 44 per cent because of the large amount of service given by pediatricians and other specialists.

	Per Cent of Visits by Type of Practitioner			
	All Physicians	General Practitioner	Pediatrician	Specialist
Whole State	100	79	10	11
Metropolitan	100	44	32	24
Adjacent	100	94	1	5
Isolated semi-rural	100	85	5	10
Isolated rural	100	96	0	4

Number of Visits Per Day—During the spring months covered by the study, general practitioners reported seeing an average of 8 child and 16 adult private patients a day.²² Nine per cent reported 50 visits or more.

	Per Cent of General Practitioners Reporting Specified Number of Visits to	
Number of Visits on one day	Persons of All Ages	Children Under 15 Years
None	8%	13%
1-9	10	55
10-19	26	25
20-29	22	
30-39	14	
40-49	11	56
50-59	5	7
60 and over	4	
Total	100	100

22. Sundays, holidays, and days off were included in making this average. The records of a few physicians, reporting 100 or more visits on one day, were excluded as presumably due to misunderstanding.

The average number of pediatricians' visits per day, based on data for four consecutive weeks, was 27.

Location of Visits—The proportion of office, home, and hospital visits is as follows:

	Per Cent of Children's Visits by Location		
	General Practitioner	Pediatrician	Other Specialist
Office	65	55	60
Home	22	14	3
Hospital	13	31	37
All	100	100	100

Summary

1. The amount of physicians' services received by children in isolated rural counties of North Carolina was about half of that received in the metropolitan counties.

2. Even in the metropolitan counties a relatively low rate of service was noted.

3. Except in metropolitan areas, most of the medical care received by children in North Carolina is provided by the general practitioner.

4. The average number of patients seen by general practitioners per day was 25. Nine per cent of general practitioners reported seeing 50 or more patients a day.

5. The average number of pediatrician visits per day was 27.

B. DENTISTS

Number, Type, and Training

At the time of the study (January, 1946), there were 659 dentists in private practice in North Carolina. Twelve dentists reported that they specialized in orthodontia. There were no pedodontists. Two dentists specialized in oral surgery, seven in periodontics, and three in prosthetics.

For the state as a whole, there was a ratio of 1,800 children per dentist. In fig. 8 this

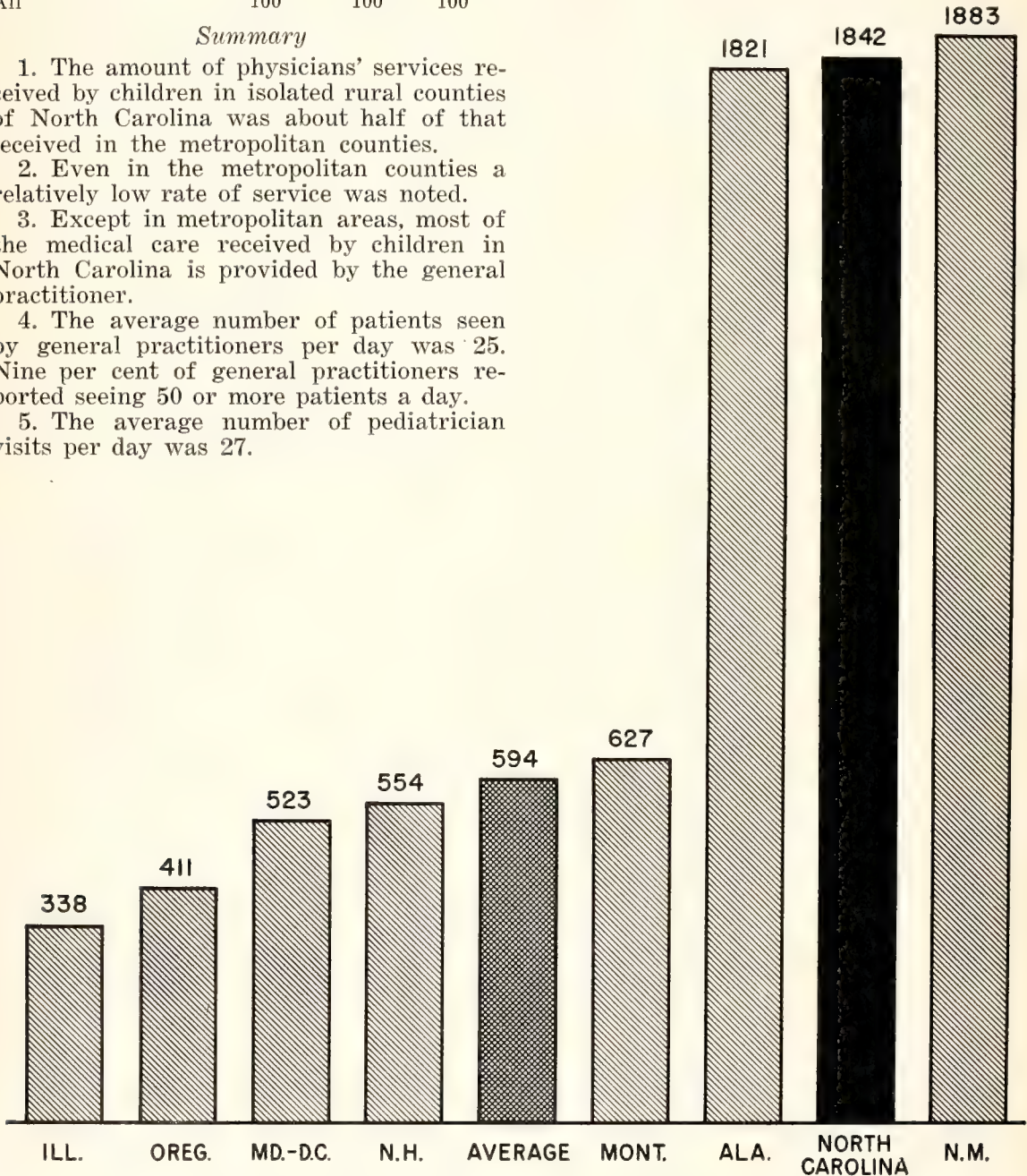


Fig. 8. Number of children per dentist in eight selected states.

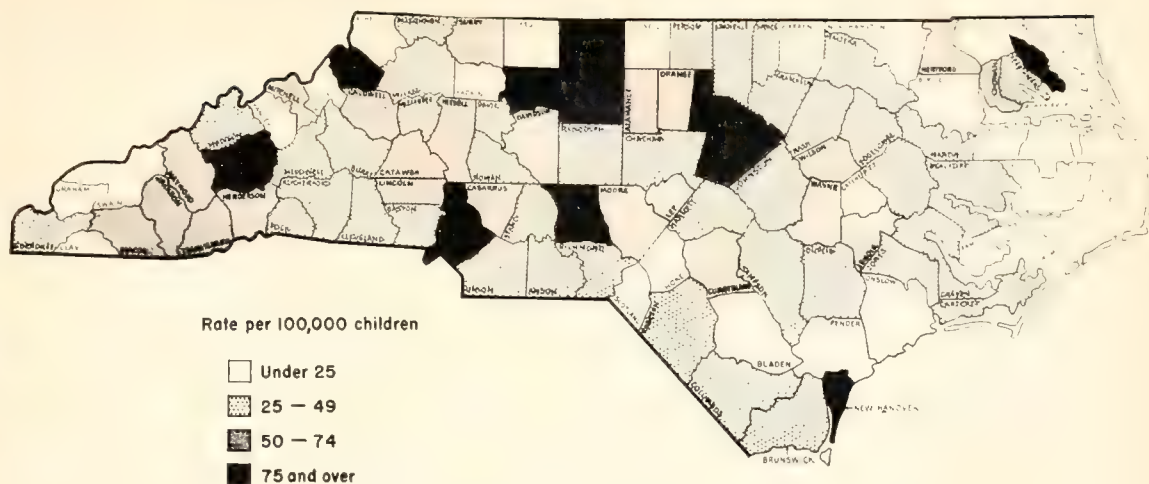


Fig. 9. Rate of dentists for each county in North Carolina.

ratio is compared with corresponding figures for the other selected states, among which North Carolina ranks seventh for this item.

The number of children per dentist in the various county groups was:

Metropolitan	900
Adjacent	2,200
Isolated semi-rural	2,300
Isolated rural	3,400

There were ten counties in which there was no dentist in private practice (appendix table A). Fig. 9 shows the position of the individual counties with respect to the relative number of dentists.

Age, Sex, Race, Training—Only 10 of the 659 dentists in private practice in North Carolina were females; 56 were nonwhite.

One-third of the dentists were in the age group under 45 years, 59 per cent were between 45 and 65, and 9 per cent were 65 or over.

Of 327 dental general practitioners who reported, only 19 had received any post-graduate training in pedodontics.

Office Assistants—Of 382 dentists who reported the number of their office assistants, 332 had one or more; 264 had only one and 68, two or more. Only five reported that they had dental hygienists in their offices.

Summary

1. North Carolina ranks seventh among the group of selected States in the relative number of dentists.

2. There were almost four times as many children per dentist in isolated rural counties as in metropolitan counties.

Dentists' Services

The rate of visits for dental care on one day has been given in Chapter II in comparison with the other selected States and for two broad county groups. The number of visits per 1,000 children on one day for each of the four county groups is:

Metropolitan	1.8
Adjacent	1.0
Isolated semi-rural	1.1
Isolated rural	0.6

On an average day a dentist sees about 9 patients, of whom one-fourth are children.

The amount of services per day by 417 dentists is shown below:

	Children Under 6 Years	Children 6-14 Years
Extractions	197	418
Fillings	191	725

Only 13 dentists out of 294 reported that they did any preschool or school dental services during a month. The number of hours average two and one-half per week for those participating. Forty-six reported participating in other dental activities, such as teaching, out-patient clinics, and institutional work.

Summary

1. The rate of dental services in metropolitan counties is much higher than in isolated counties.

CHAPTER V—COMMUNITY HEALTH SERVICES

During the past 25 years a variety of child health services has grown up in local communities. For the purposes of this study a selection was made of seven types which have either been accepted or are being increasingly recognized as community responsibilities. This list by no means covers all desirable services but offers a fair measure of community activity for child health. Appendix table C shows, county by county,²³ which of these services are available in North Carolina. For those community programs which should be provided close to the patient's home, some measure of the amount of service in the county is given. For mental hygiene clinics and services for the physically handicapped, location of the clinic is indicated.

health services, and other medical activities aside from private practice.

	Child Health Conferences	School Health Services	Other Medical Activities
Hours per general practitioner:			
Participating	9.2	8.1	17.4
All reporting	1.4	1.1	3.7
Hours per pediatrician:			
Participating	7.8	0	51.5
All reporting	1.3	0	44.1

A. MEDICAL WELL-CHILD CONFERENCES

About 5,000 sessions²⁴ were held in North Carolina during the report year. All of these were under the auspices of local health departments.

More than one-third of the counties in North Carolina had no well-child conferences during the year (fig. 10). Some other

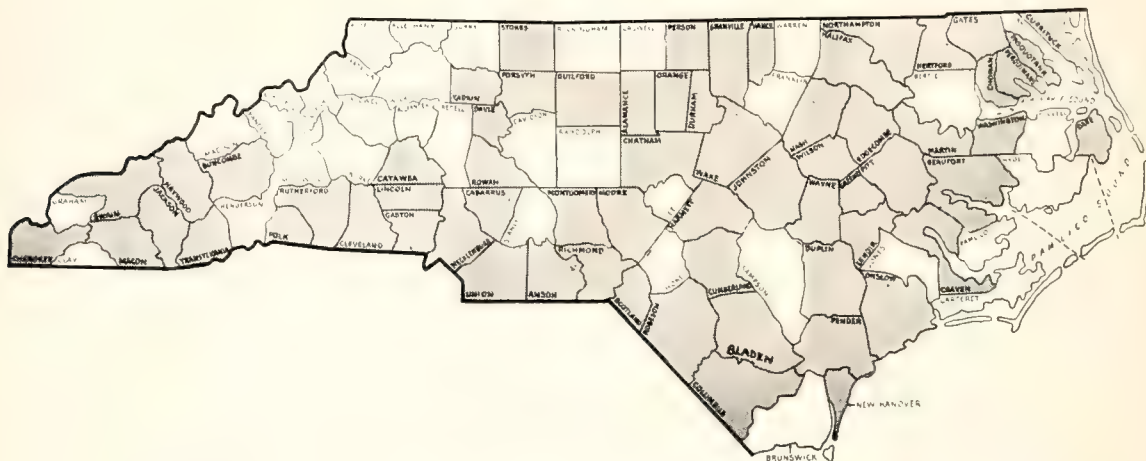


Fig. 10. Counties with medical well-child conferences (shaded areas)—North Carolina.

In North Carolina almost all of the services are provided by public agencies, but frequently financial assistance is given by private groups. The crippled children's program is especially rich in this sort of cooperative arrangement. Clubs, such as the Lions, Rotary, Kiwanis, Variety, and the American Legion contribute to the purchase of eye glasses and braces, or provide other assistance. By such cooperative planning and operation, duplication can be avoided.

Although the administering authority is the public agency, the medical care is often rendered by local practicing physicians. Below is shown the amount of time per month spent by general practitioners and by pediatricians in child health conferences, school

counties had so few sessions that it was evident that only a small part of the county was being served and that continuing regular supervision was not being given.

North Carolina's position relative to the other selected States in well-child conference services is shown in fig. 11. The rate of services in the State as a whole is about one fourth of that in the highest of the eight States.

The number of sessions, patients, and visits per 1,000 children under 5 years of age²⁵ during one year is shown in the following

24. Data are limited to conferences with physician in attendance and for 1944, except for 11 counties reporting for 1945.

25. Rates for medical well-child conferences are expressed per children under 5 years of age; for all other community health services, they are expressed per children under 15 years of age.

23. The data are also available for individual cities of 50,000 or more population.

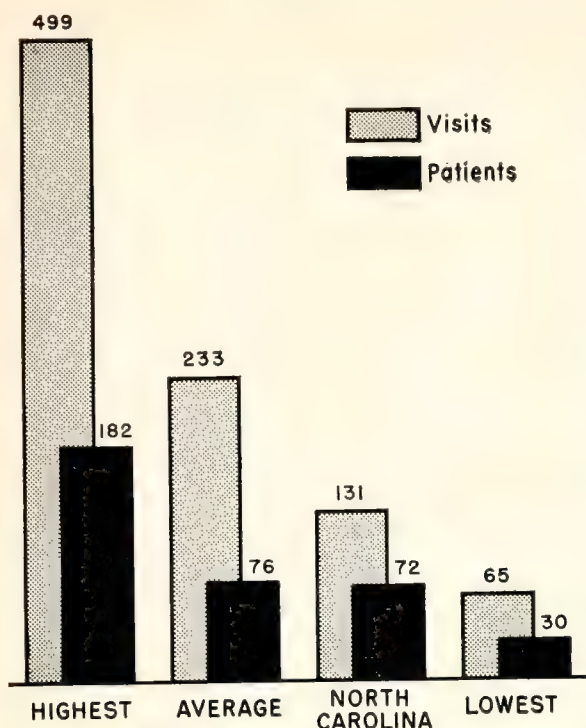


Fig. 11. Rate of services in medical well-child conferences in North Carolina (Visits per 1,000 children under age 5 per year)—Comparison with eight selected states.

table for the four county groups of North Carolina.

	Sessions	Patients	Visits
Whole State	10	72	131
Metropolitan	20	175	363
Adjacent	7	38	67
Isolated semi-rural	8	51	81
Isolated rural	11	57	85

Since race was not reported for a large number of patients, no rates by color are possible. However, it did not appear that the service was restricted by race. More than 50 per cent of the sessions were reported as mixed. No county reported services exclusively for white children.

Although it is not possible in a study of this kind to gather extensive data on the kind of service provided in well-child clinics, certain significant facts are evident. There did not appear to be overcrowding²⁶ in the North Carolina clinics, since an average of only 13 children were seen per session (18 in metropolitan counties). The visits per patient was 1.8, contrasting with 5.2 in one of the eight States and 3.1 for all eight combined. These facts indicate that many of the clinics serve for examination or immunization only, not for continuing care.

26. In some instances maternity patients also were seen during these sessions.

Routine immunization for smallpox, diphtheria and whooping cough²⁷ and advice to mothers on formulae and feeding, care and training, seem to be well-accepted procedures. The practice of having the consultant services of a nutritionist or psychologist was reported by agencies conducting about half the sessions in the metropolitan counties, but was uncommon in outlying counties.

In the well-child conferences reporting that immunizations were routine procedures, 40 per cent of the children were immunized against diphtheria during the year.²⁸

B. MENTAL HYGIENE SERVICES

The location of mental hygiene clinics with services for children is shown in fig. 12. All are in large cities.

Out of a population of over a million children, only 403 were given care in these clinics during one year. The number of patients per 1,000 children per year was 0.33 as compared with 3.7 for the highest of the eight States. The average for the eight States was 1.7.²⁹

The number of visits per 1,000 children was 1.4, as against 18 for the highest of the eight States. (See fig. 13.)

Child guidance clinics were reported to provide services for both white and non-white children.

C. SERVICES FOR THE PHYSICALLY HANDICAPPED

Crippled Children's Clinics—The crippled children's services, operated by the State health department, conducted clinics in 25 centers throughout the State in 1945 (See fig. 12). Several hospitals care for a number of crippled children as a part of their regular hospital and out-patient service. Only one private agency holds a separate crippled children's clinic, but many private groups contribute financial and other assistance to the public programs.

The service rendered is almost exclusively orthopedic. There is no special service for children with cerebral palsy or hearing defects and no rheumatic fever program. Clinics are usually conducted by part-time orthopedic surgeons. Only two of the centers reported having the services of a pediatrician. Some medical-social services and some public health nursing is supplied by staff

27. There was a gap between policy and procedure, as the percentages immunized were 24, 40, and 19 for these three diseases respectively.

28. North Carolina is the only State in the country having a compulsory diphtheria immunization law for all infants. Many children attending well-child conferences receive their immunizations from the private practitioner or directly from the health department. Hence, immunizations at the conferences are only part of the picture.

29. In three of the eight States there were no community mental hygiene services reported.

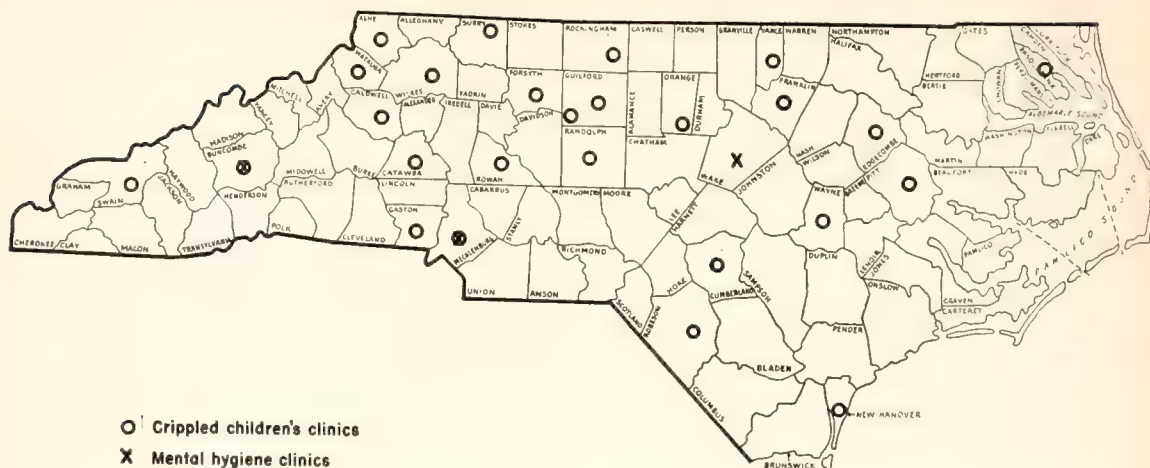


Fig. 12. Location of (a) mental hygiene clinics providing services for children and (b) clinics for crippled children in North Carolina.

from the State health department. Local public health nurses also assist in the clinics and do home follow-up work.

Services for the Blind—Under the auspices of the North Carolina State Commission for the Blind, clinics are held at intervals throughout the State for examination and treatment of persons with visual defects. None of these is a special children's clinic, but children are seen with adults.

Rate of Services—In fig. 13 is given the rate of visits to clinics for the physically handicapped in North Carolina in comparison with the group of eight States. The rate for North Carolina was 11 per 1,000 children per year, the highest state being 32.

About one-fifth of the children seen in these clinics are Negroes.

D. PUBLIC HEALTH NURSING SERVICES

Public health nursing service has long been considered an essential element of a community health program. However, during the study year, 9 counties had no public health nursing services.

Public health authorities usually consider that, for a successful and adequate program, there should be one nurse per 2,500 population or about one nurse to 800 children. The child population per full-time nurse in North Carolina by county group, and in comparison with the eight States, is given below:

North Carolina	3,300
Eight States:	
Best	1,300
Average	2,600
Worst	5,000
North Carolina counties:	
Metropolitan	1,600
Adjacent	4,800
Isolated semi-rural	4,300
Isolated rural	4,000

The number of home visits per year per 1,000 children is shown in fig. 13 in comparison with the eight States.

The figures by county group were: Metropolitan, 309 per 1,000 children; adjacent, 56; isolated semi-rural, 52; isolated rural, 60. This important service is particularly deficient in all but metropolitan counties.

In general, where public health nursing services are provided by official agencies, they are for both white and Negro children. Seven counties, however, reported home visits to white children only and several others reported only a few home visits to nonwhite children. The rate of home visits per 1,000 children per year was 88 for white children and 132 for nonwhite children.

E. SCHOOL HEALTH SERVICES

Responsibility for school health programs rests in some states with the education department, in some with the health department, and in others there is joint responsibility. In North Carolina almost all the service is provided by the health department.

Twenty of the counties (one-fifth) were without any school medical services³⁰ in any elementary public school during the report year; 13 counties were without either school medical or nursing services. In the 79 counties having some service, the service may have been confined to one school or one section of the county. Since the amount of coverage could not be determined from the data obtained, it has been necessary to take this negative approach, reporting the areas with *no* service in any school but leaving unanswered the question of the *amount* in counties with *any* service.

30. Defined as a program having a physician who examines some children other than those on athletic teams.

The responsibility for school medical services falls largely on the health officer in North Carolina. Eighty-eight health officers assisted in the schools in contrast with

twenty-two school physicians.³¹

Of the 320 nurses working in the schools, 316 were employed by official health agencies. Most of them were county public health nurses who included school services as part of their generalized programs. No nurses were employed full-time in the schools in North Carolina.

Except in six counties, services, if provided, were reported to be available to both whites and Negroes. Forty-two of the 320 nurses giving service in the schools are Negroes.

F. COMMUNICABLE DISEASE CONTROL

No estimate of the total number of immunizations made in one year against specific communicable diseases of children can be given.³² Thus comparisons with other states are not justified. It is of interest, however, to indicate that the rates of children immunized per 1,000 by official community health agencies in one year were:

Smallpox	67
Diphtheria	57
Whooping cough	16

The rates were not consistently different by county group.

G. DENTAL SERVICES

Dental caries is one of the most common diseases of man. It has been estimated that at least 90 per cent of school children have dental caries and that probably not more than 25 per cent receive adequate care. Because of the magnitude of the problem, public programs for providing dental care have grown up in most states. Some are programs of dental health education, some are dental examination programs, and some include dental care. For the purpose of this study, a community dental service was defined as one giving dental care other than examinations.

In North Carolina the State health department for several years has had a program of dental care, operated with the cooperation of local health departments. A few cities also operate dental care programs. There are no private agencies giving this type of care except a few hospital out-patient departments.

In fig. 13 is given the rate of visits made to dental clinics during one year in North Carolina in comparison with the selected States. The rate of service in the highest of the eight States was two and a half times

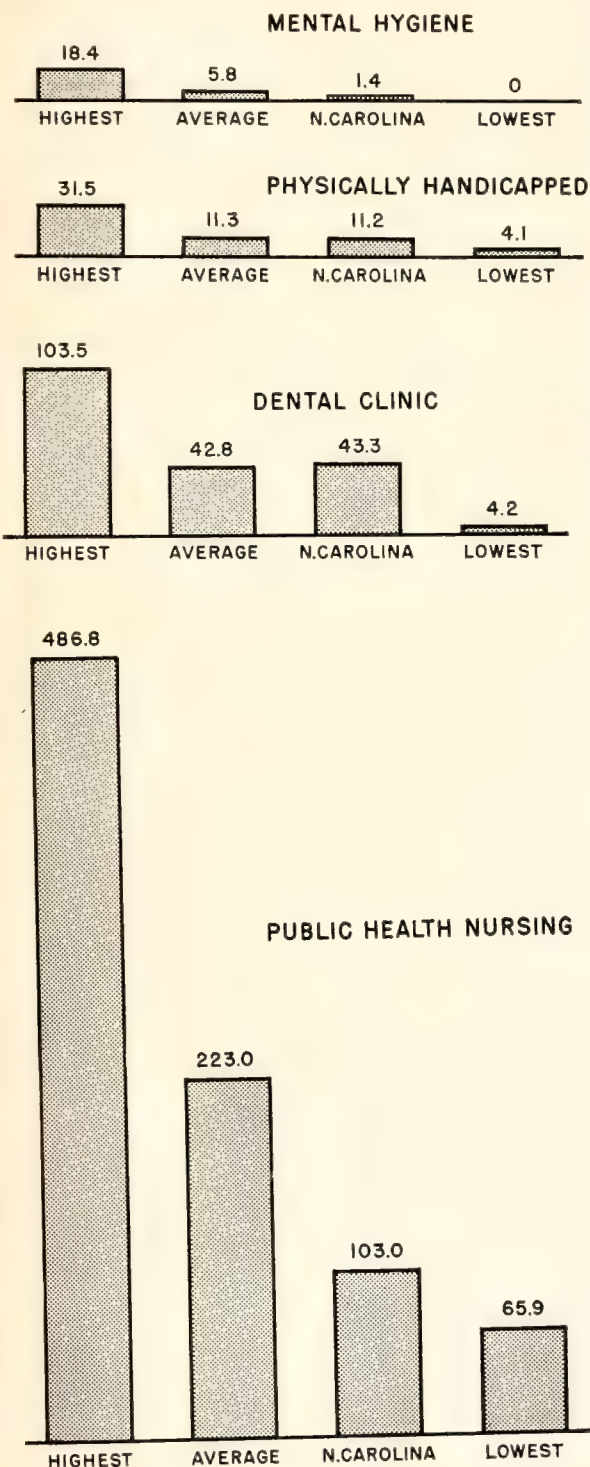


Fig. 13. Rates for specified community health services (Visits per 1,000 children per year)—Comparison with eight selected states.

31. Some duplication may exist since some physicians serve more than one school system or more than one county on a part-time basis.

32. Physicians were not asked to record the number of immunizations given in their private practice. The data for community health agencies are subject to under-reporting.

that in North Carolina. There was no great variation in the rates by county groups.

One characteristic of a good dental service for children is the preponderance of fillings over extractions. Provided both services are freely available, the filling-extraction ratio may be taken as a rough index of the extent to which preventive dentistry is applied. This ratio for children in North Carolina was 0.9, the lowest of the selected States. The average for the eight states was 2.0.

Summary

1. More than one-third of the counties in North Carolina had no well-child conferences during the year. The service was relatively meager except in metropolitan counties.

2. In the State as a whole, the visits to medical well-child conferences were about a quarter of those in the highest State when related to the child population under 5 years

of age.

3. A more extreme difference between services in North Carolina and in the eight States as a whole was indicated for mental hygiene clinics.

4. For the physically handicapped children, the rate of service was one-third in North Carolina in comparison with the highest of the selected States.

5. The number of children per public health nurse was 3,300, against a standard of about 800. The figure for the most favored of the eight States was 1,300.

6. There was a marked difference in public health nursing services by county group.

7. A fifth of the counties had no school medical service in any public elementary school.

8. The rate of services in dental clinics in the highest of the eight states was two and a half times that in North Carolina.

CHAPTER VI—HOSPITAL³³ FACILITIES
AND SERVICES

A. GENERAL HOSPITALS

The general hospital, at its best, serves not only as a place where the sick may be

33. In this report the term "hospitals" is limited to those caring for children, including the newborn. No institution is included having less than 5 beds for regular in-patient care. Federally-owned hospitals (except those operated by the Bureau of Indian Affairs) are excluded.

given in-patient care, but also as a health center for the entire community with out-patient services, public health clinics, health education, and training for physicians and nurses. It has become a complicated and expensive instrument; but, without access to a good general hospital, no community is adequately equipped to fight against ill health.

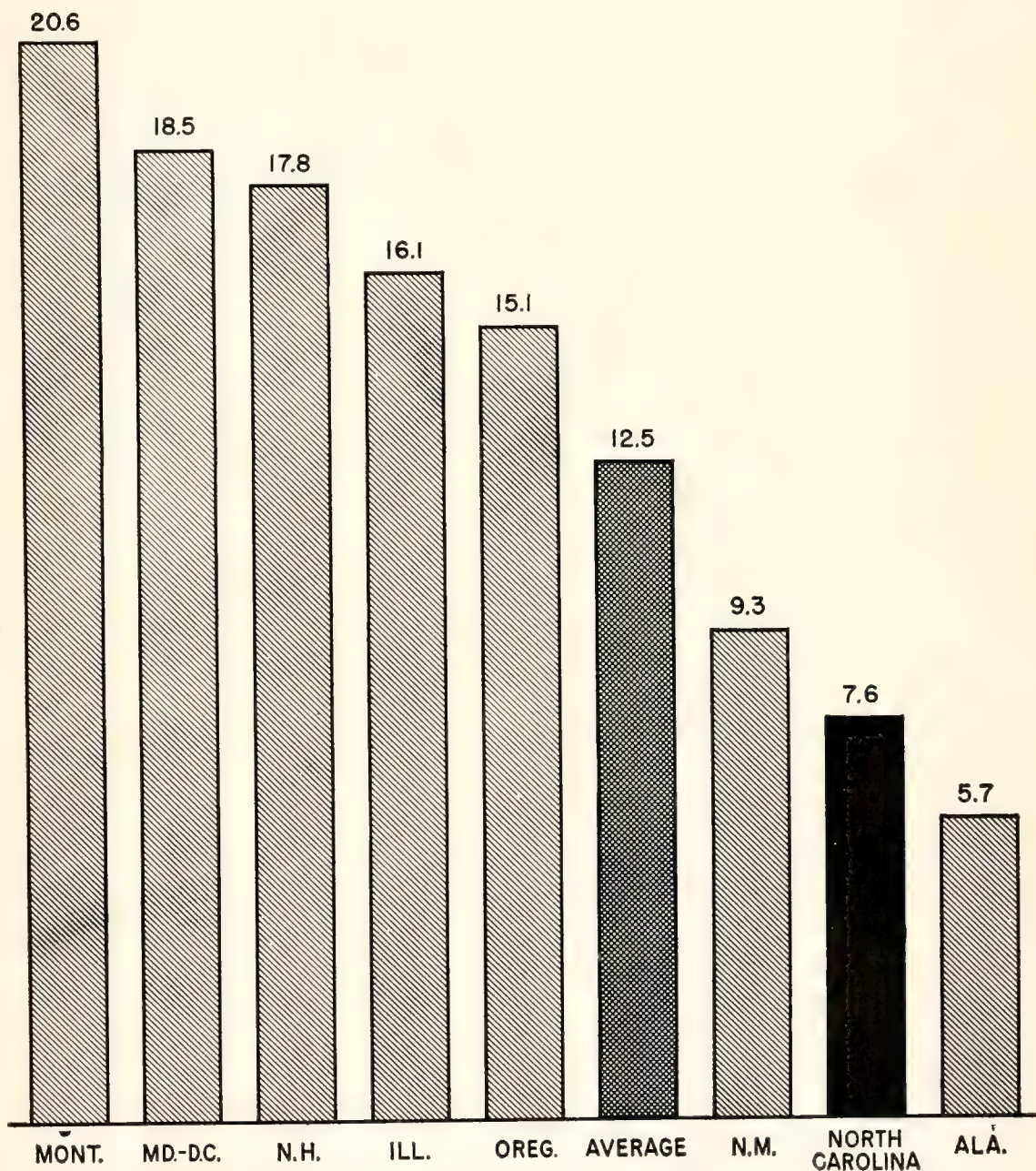


Fig. 14. Beds (total) in general hospitals per 1,000 children in eight selected states.

1. Facilities and Services for Children (other than newborn)

There are 136 general³⁴ hospitals in North Carolina caring for children; 39 of these have pediatric units.³⁵ A great majority of the hospitals (64 per cent) are between 25 and 100 beds in size.

The general hospitals included in this study have 9,262 beds, or 7.6 per 1,000 children. In these hospitals, 688 beds are set aside for the exclusive use of children, 7 per cent of all beds in the State.

In the following and in fig. 14, these data are compared with the eight States:

	Per 1,000 children		Percentage of beds
	Total	Pediatric	which are permanently
	beds	beds	set aside for
			children
North Carolina	7.6	0.6	7.4
Highest state	20.6	2.0	9.8
Total	12.5	1.2	9.4
Lowest state	5.7	0.5	4.3

In terms of total beds per 1,000 children, the discrepancy in North Carolina in comparison with the highest of the eight states is 63 per cent; for pediatric beds, 74 per cent.

The number of beds per 1,000 children is 10.3 in metropolitan and adjacent counties and 5.2 in isolated counties—one-half as many in the latter case.

Admissions of children to general hospitals in North Carolina totalled 67,582 during the year of study, giving an annual rate of 56 per 1,000 children against 83 in the highest of the eight States. The rates by county group in North Carolina were 70 in metropolitan and adjacent counties and 43 in isolated counties.

The majority of the admissions of children were to hospitals having between 25 and 100 beds (63 per cent). Only 4 per cent were to hospitals having less than 25 beds.

Of the 136 general hospitals in North Carolina, 14 restrict their admissions to Negro patients and 78 admit both white and Negro. Data on admissions of Negro children were not reported adequately enough to be included in this study.

2. Newborn Care³⁶

Of the total amount of care for children

34. For the purpose of this report, "general" is taken to include maternity and pediatric. Of the 136 hospitals, 3 were the former and 1 the latter. A few either admitted children but not maternity cases, or did not admit children but did take maternity cases.

35. A unit of 5 or more beds permanently set aside for the care of children in hospitals with 25 beds or more. The figures include the one pediatric hospital in the State.

36. Data on the proportion of births hospitalized have been shown in the Introduction.

in general hospitals in North Carolina, 41 per cent is for newborn. This fact carries implications for pediatricians for leadership in hospital planning and in conduct of nursery care.

At the time of the study, there were 1,880 bassinets and 167 incubators in the State. An increase in the number of births hospitalized would require more bassinets and incubators.

3. Characteristics of Hospitals Caring for Children

Quality of medical or hospital care is difficult to measure. An effort was made in the study, however, to obtain answers to certain objective questions which provide a few indices of the quality of care provided in hospitals. The items include space, organization of the pediatric service, medical staff, nursing, special services, and certain accepted pediatric practices. These characteristics are related to the amount of service provided in the hospitals having them.

The proportion of children admitted to hospitals with specified characteristics is shown below, in comparison with the corresponding proportions for the other seven States.

	Per cent of child admissions to hospitals (a) with specified characteristics			
	Eight States			
	North Carolina	High-est	Aver-age	Low-est
Separate pediatric unit	60	91	73	51
Graduate nurse on duty at all times in pediatric unit	41	71	61	41
Any house staff	36	90	56	8
Clinical laboratory	75	97	89	72
Selected clinical laboratory services available (b)	50	96	77	50
Trained dietitian on staff	77	94	83	35
Separate ward for infants other than newborn	18	79	52	18
Average percentage	51	88	70	39

(a) Hospitals with 25 or more beds.

(b) Blood level for sulfonamides, sedimentation rate, blood culture, and serum protein.

Certain striking facts are apparent. Only 36 per cent of the children hospitalized in North Carolina go into a hospital which has a house staff; the per cent for the highest of the eight States is 90. For all the selected items, North Carolina falls definitely below the average for the eight States.

Newborn—A comparison is made for care of newborn in the following table:

	Percentage of hospitalized births occurring in hospitals with specified characteristics (a)			
	Eight States			
	North Carolina	High-est	Aver-age	Low-est
Any house staff	33	90	58	4
Graduate nurse on duty at all times in newborn nursery	77	98	91	77
Room used exclusively for preparation of formulae	55	94	78	29
Nursery for full-term sick or suspect newborn, separate from well	24	66	37	0
Average percentage	47	87	66	28

(a) Hospitals with 25 or more beds.

The Very Small Hospital—Although only 4 per cent of child admissions and 8 per cent of births occur in hospitals having fewer than 25 beds, the deficiency of facilities in such hospitals in comparison with larger ones, as indicated in the following table, points to one of the problems in the provision of adequate hospital facilities.

	Per cent of hospitals with specified characteristics	
	Fewer than 25 beds	25 beds and more
Registered by AMA	38	97
Clinical laboratory in hospital	17	62
Separate nursery for newborn only	62	94
Graduate nurse on duty at all times in newborn nursery	35	77
With pediatric unit	0(a)	36
Average percentage	30	73

(a) By definition.

4. Facilities for the Care of Acute Poliomyelitis

During the last few years, considerable attention has been focused on the problem of hospital facilities for the diagnosis and treatment of acute poliomyelitis. In 1944 more than 800 cases were reported in North Carolina. In order to provide hospital care for these cases a special temporary hospital was constructed near Hickory.

Of the 103 general hospitals with 25 or more beds reporting on the item, only 13 treat children with acute poliomyelitis, and 43 admit suspected cases for diagnosis only.

Summary

1. The number of beds per 1,000 children in general hospitals was 7.6 in North Carolina, about a third of the number per 1,000 children in the highest of the eight States.

2. In isolated counties the number of such beds per 1,000 children was one-half of that in metropolitan and adjacent counties.

3. Seven per cent of the beds in general hospitals were assigned to children. Of the beds in hospitals with a pediatric unit, the percentage was 13.

4. Admissions of children to general hospitals during the year of the study (per 1,000 children) was 68 per cent of those in the highest of the eight States. The rate in isolated counties of North Carolina was 39 per cent less than that in metropolitan and adjacent counties.

5. In respect to all items chosen as indicating quality of hospital care, North Carolina falls well below the average of the eight States.

B. SPECIAL HOSPITALS ADMITTING CHILDREN

The relative importance of the special hospital in the care of children is indicated by the fact that during one year there were 97,000 days of care to children in such hospitals (as against an estimated³⁷ 473,000 days of care in general hospitals).

The 97,000 days of care in special hospitals were distributed as follows by type of hospital:

	Number of hospitals admitting children	Days of child care
Tuberculosis	1	18,109
Nervous and mental (a)	1	13,926
Orthopedic	1	54,264
Eye, ear, nose, and throat	3	3,700(b)
Convalescent	1	7,067
Contagious disease (c)	0	0
Total	7	97,066

(a) Institutions for the feeble-minded are excluded.

(b) Estimated for two hospitals.

(c) There was one general hospital with a contagious disease unit of 10 beds or more.

The location of the special hospitals in North Carolina caring for children is shown in fig. 15.

The number of days of care for children in special hospitals during one year in North Carolina was 80 per 1,000 children, compared with 246 in the highest of eight States and 15 in the lowest, the average for the eight States being 81.

The admission policies for the State-operated special hospitals are uniform in that child patients are not admitted from outside the State, although patients are admitted from any part of the State. Most of privately owned institutions admit non-residents of the State. Most county operated tuberculosis hospitals admit patients from outside their own county on payment of actual in-patient cost.

37. On basis of child admissions times 7.

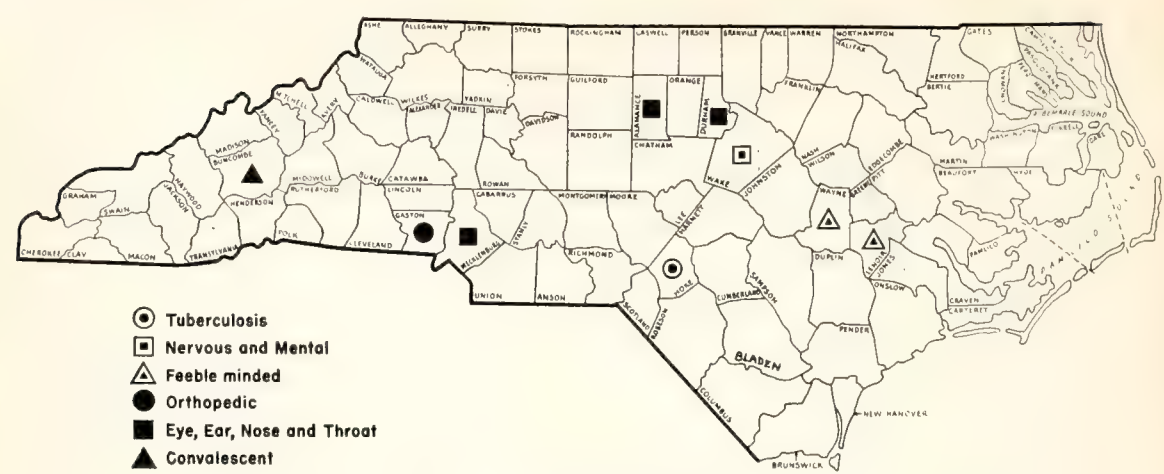


Fig. 15. Location of special hospitals admitting children in North Carolina.

Summary

In comparison with the highest of the eight States, North Carolina is deficient in services in special hospitals.

C. OUT-PATIENT SERVICES FOR CHILDREN

Of the State's 136 general hospitals caring for children, 50 operate out-patient departments, half in metropolitan and adjacent counties and half in isolated counties.

Because of the small number of hospitals which keep records of out-patient visits of children, no data on the number of reported visits are given in this section.³⁸

38. For the purpose of determining the total volume of medical care, it was necessary to include some figure for outpatient services to children; if not reported these were estimated as 10 per cent of the total number of outpatient visits by persons of all ages.

The number of pediatric clinics furnishing specialist service to children is as follows:

	Number of Clinics
Allergy	5
Cardiology	5
Mental Hygiene	2
Luetic	4
Neurology	5
Surgery	5
Eye	5
Ear, Nose and Throat	5
Orthopedic	4
Dentistry	3

This number does not indicate the extent of this special service for children, since adult specialty clinics also see children.

CHAPTER VII—CONCLUSIONS AND RECOMMENDATIONS

I. State Committee on Child Health

A survey of the services received by the children of North Carolina and facilities available for their medical care and health supervision shows that the state compares unfavorably with many other states. Furthermore, within the state itself there exists a maldistribution of physicians, community health services and hospitals. Deficiencies and inequalities which are interrelated and mutually dependent have been revealed in all aspects of child health services.

An Advisory Committee on Child Health, representing all agencies in the State with major interest in child health, should be created without delay. This Committee should be charged with the responsibility of developing and effecting coordinated plans for the improvement of child health in order to correct the interrelated deficiencies and to assure that children will receive adequate medical care regardless of race, economic status or geographic location. This Committee should have sufficient financial support to provide for a full-time executive secretary and the operating expenses necessary to implement the recommendations of the Committee.

II. Subsidies for Physicians in Areas of Need

In North Carolina there is 1 physician to 764 children. In eight selected States the average ratio is 338 children per physician. Physicians are concentrated in or near urban centers, this concentration being particularly marked in respect to pediatricians and other specialists. All of the pediatricians are located in cities of at least 10,000 population, in areas of relatively high per capita income.

A planned and aggressive recruitment program by the state and local medical societies should be undertaken in order to provide more well-trained physicians. Inducements must be established to attract these well-trained physicians where they are needed most. A better distribution of hospital facilities, as described below, will tend to correct the maldistribution of physicians. At the same time, provision must be made to assure a reasonable income for physicians practicing in areas of economic stress. Subsidies should therefore be provided for physicians with training in pediatrics to attract both general practitioners and pediatricians to settle in areas of need.

III. More Opportunities for Training in Child Health

Most of the medical care of North Carolina children is given by the general practitioners, yet 40 per cent of the general practitioners reported that after graduation from medical school they had had either no hospital training at all in pediatrics or less than one month.

Medical schools and teaching hospitals should emphasize pediatric education in order to increase the number of physicians—general practitioners as well as pediatricians—with better training in medical care and health supervision of children. Postgraduate teaching in pediatrics should be made more readily available. Those who undertake special responsibility in the field of child health, as for example the physicians in charge of child health clinics and school health services, should be required to take postgraduate study. Financial support should be provided for these physicians so they will not suffer loss of income during the time they are away from their own practice. Consideration should be given to raising the salary level in official health agencies so as to enable these agencies to acquire professional personnel of high calibre.

As a step toward keeping the physicians of the state currently informed of advances in pediatrics, it would be desirable to have a monthly pediatric column in the State Medical Journal describing new diagnostic and therapeutic procedures and the latest opinions on controversial subjects.

IV. Expansion of Community Health Services

Community health services throughout North Carolina are inadequate and poorly distributed. More than one-third of the counties have no child health conferences. The average rate of attendance in mental hygiene clinics is far less than in many other states. Gaps are likewise revealed in services for the physically handicapped, public health nursing and school health services. Pediatricians, the total number being relatively few, play a minor role in community health services and health supervision of children.

The State Medical Society should take an active part in encouraging support of public health programs. Child health conferences should be increased in number and better distributed so that services are available in every county. School health services, mental hygiene clinics and crippled children's clinics should be expanded, more adequately su-

pervised, and maintained in accordance with recognized standards. Particular attention should be given to finding ways and means to provide more adequate financial support for these services. More emphasis should be placed on immunization of infants and children against smallpox, diphtheria, tetanus, whooping cough and typhoid by physicians in private practice and by official health agencies. Pediatricians should assume greater responsibility for the development and conduct of health conferences, pre-school and school services.

A well-rounded rheumatic fever program is necessary in the State and should be instituted at the earliest possible moment.

The shortage of well-trained public health nurses now decreases the effectiveness of existing community health services and limits their expansion. Therefore, facilities for the training of such nurses should be improved and strengthened so that more nurses may be better trained and better distributed through the State.

V. Increase in General Hospital Facilities

North Carolina falls far below many other states in respect to hospital beds and the quality of hospital care. The number of hospital beds in relation to child population is only about one-third of the number in certain more favored States. The deficiency is especially pronounced in isolated counties.

An increase in hospital beds is essential if adequate hospital care is to be provided for the children of the State. Such an increase in isolated counties would tend to attract general practitioners and pediatricians to these areas of need. Facilities should be made available in all hospitals for the care of communicable diseases, including poliomyelitis. Emphasis should be placed on the importance of resident physicians in hospitals. It is recommended further that general hospitals, especially those with over fifty beds, should have a pediatrician on the staff, and that all hospitals, irrespective of size, should have services to which general practitioners are eligible. Consideration should be given to providing offices in hospitals for the doctors of the community. This is particularly desirable in rural areas as a step toward more complete medical care and as an additional attraction to bring physicians to these areas.

Small hospitals should arrange for affiliation with larger hospitals or medical centers so as to provide for consultation service in medical care and laboratory diagnosis. By providing for extension of medical services

from teaching centers, much could be accomplished in filling the gap which now exists between advances in medical knowledge and its application to patients.

VI. A Program for Premature and Other Newborn Infants

The per cent of babies born in hospitals in North Carolina is relatively low, particularly in isolated areas where the infant mortality is relatively high. Among Negroes there is an even more pronounced inverse relation between hospital births and infant mortality.

A well-developed and coordinated program for prematures is necessary in the State, if we are to decrease the mortality of the neonatal period, since prematurity accounts for approximately half of the neo-natal deaths. The majority of the remaining causes of neo-natal deaths are difficult to eliminate, being congenital anomalies, injury at birth, etc. A program which would include designating premature centers in various sections of the State, and a program which would remunerate suitably qualified physicians for the care of prematures, would greatly aid in decreasing the death rate.

VII. A Long-Term Program

It is realized that all of the deficiencies cannot be corrected immediately. However, the State Pediatric Society has adopted an aggressive program which it intends to follow and which it hopes will eventuate in better medical care for children regardless of race, creed, color, financial status or geographic location. Already some of these recommendations are being put into action. Through the cooperation of the State Health Department, a program of better care for premature infants in the State is being initiated. It is hoped that this will be followed by an adequate rheumatic fever program. At the same time, while younger pediatricians are being encouraged to go into the smaller communities, they can be shown from the statistical data available in this report that clinical material is abundant in the areas in which they are needed.

VIII. Recommendations on dental services for children

Serious deficiencies in dental care for children in North Carolina, with respect to both private practice and clinics, have been brought out in this report. Recommendations to meet such deficiencies are under consideration by the State Dental Society and other bodies concerned with the provision of dental care.

Appendix Tables

Appendix A. Child population, physicians, dentists, hospital beds and rates, by county in North Carolina.

County group and county	Child population		Private practitioners					Number of beds in general hos- pitals
	Under 15 years	Under 5 years	Number			Number per 100,000 children		
			Physicians		Dentists	Physi- cians	Dentists	
			Total	General practi- tioners				
1 Whole State.....	1,212,520	486,134	1,587	1,093	659	130.9	54.3	9,262
2 Alamance.....	18,777	7,654	36	28	11	191.7	58.6	92
3 Alexander.....	4,552	1,742	5	5	2	109.8	43.9	0
4 Alleghany.....	2,562	850	3	3	1	117.1	39.1	0
5 Anson.....	9,701	3,783	10	9	3	103.1	30.9	40
6 Ashe.....	8,200	3,126	4	4	2	48.8	24.4	28
7 Avery.....	5,505	2,152	6	6	0	109.0	—	90
8 Beaufort.....	11,753	4,735	15	11	5	127.6	42.5	91
9 Bertie.....	9,872	3,994	5	5	1	50.6	10.1	5
10 Bladen.....	10,941	4,252	6	6	2	54.8	18.3	0
11 Brunswick.....	6,966	2,737	2	2	2	28.7	28.7	50
12 Buncombe.....	30,039	11,460	80	37	35	266.3	116.5	367
13 Burke.....	13,639	5,479	15	12	5	110.0	36.7	144
14 Cabarrus.....	19,877	8,153	33	26	10	166.0	50.3	163
15 Caldwell.....	13,982	5,637	11	10	8	78.7	57.2	66
16 Camden.....	1,682	591	2	2	0	118.9	—	0
17 Carteret.....	5,700	2,314	13	9	2	228.1	35.1	40
18 Caswell.....	7,390	3,015	3	3	1	40.6	13.5	0
19 Catawba.....	17,815	7,112	15	13	12	84.2	67.4	127
20 Chatham.....	7,705	3,123	7	6	2	90.8	26.0	18
21 Cherokee.....	7,080	3,184	6	4	3	84.7	42.4	42
22 Chowan.....	3,931	1,554	5	5	2	127.2	50.9	0
23 Clay.....	2,373	1,095	1	1	0	42.1	—	0
24 Cleveland.....	20,384	8,457	18	14	8	88.3	39.2	114
25 Columbus.....	18,223	7,194	15	13	6	82.3	32.9	77
26 Craven.....	11,574	4,658	16	13	4	138.2	34.6	128
27 Cumberland.....	23,669	10,464	23	13	12	97.2	50.7	221
28 Currituck.....	1,828	678	2	2	0	109.4	—	0
29 Dare.....	1,640	625	1	1	0	61.0	—	0
30 Davidson.....	16,619	6,020	23	17	11	138.4	66.2	75
31 Davie.....	4,449	1,676	3	3	2	67.4	45.0	0
32 Duplin.....	14,865	6,011	11	11	4	74.0	26.9	0
33 Durham.....	21,644	9,386	74	26	23	341.9	106.3	841
34 Edgecombe-Nas	35,540	14,126	45	33	14	126.6	39.4	267
35 Forsyth.....	35,863	13,495	83	38	40	231.4	111.5	708
36 Franklin.....	10,458	4,201	8	8	4	76.5	38.2	17
37 Gaston.....	31,908	11,941	37	31	13	116.0	40.7	122
38 Gates.....	3,249	1,238	3	3	0	92.3	—	0
39 Graham.....	3,564	1,514	1	1	0	28.1	—	0
40 Granville.....	10,277	3,818	10	10	4	97.3	38.9	52
41 Greene.....	6,772	2,756	5	5	1	73.8	14.8	0
42 Guilford.....	43,999	17,157	106	52	49	240.9	111.4	498
43 Halifax.....	20,739	8,603	25	21	7	120.5	33.8	110
44 Harnett.....	16,409	6,323	14	13	7	85.3	42.7	84
45 Haywood.....	12,347	4,772	12	10	8	97.2	64.8	75
46 Henderson.....	7,793	3,165	19	17	4	243.8	51.3	108
47 Hertford.....	6,200	2,343	6	6	4	96.8	64.5	0
48 Hoke.....	5,569	2,136	5	5	1	89.8	18.0	0
49 Hyde.....	2,315	802	1	1	0	43.2	—	0
50 Iredell.....	15,977	6,160	19	14	10	118.9	62.6	237
51 Jackson.....	6,776	2,494	4	4	5	59.0	73.8	27
52 Johnston.....	22,791	9,195	19	17	7	83.4	30.7	35
53 Jones.....	3,972	1,562	3	3	1	75.5	25.2	0
54 Lee.....	6,664	2,925	8	7	4	120.0	60.0	53
55 Lenoir.....	14,099	5,723	17	11	9	120.6	63.8	138
56 Lincoln.....	8,122	3,230	12	10	5	147.7	61.6	82
57 McDowell.....	8,409	3,096	10	9	3	118.9	35.7	35

Appendix A (cont'd). Child population, physicians, dentists, hospital beds and rates, by county in North Carolina.

County group and county		Child population		Private practitioners					Number of beds in general hos- pitals (8)
		Under 15 years (1)	Under 5 years (2)	Number			Number per 100,000 children		
				Physicians		Dentists (5)	Physi- cians (6)	Dentists (7)	
				Total (3)	General practi- tioners (4)				
58	Macon.....	5,896	2,533	5	4	3	84.8	50.9	72
59	Madison.....	7,550	2,874	5	5	3	66.2	39.7	0
60	Martin.....	10,138	4,104	5	5	3	49.3	29.6	35
61	Mecklenburg...	44,632	18,595	114	33	48	255.4	107.5	954
62	Mitchell.....	5,827	2,226	4	4	3	68.6	51.5	0
63	Montgomery...	5,188	2,040	5	5	5	96.4	96.4	0
64	Moore.....	9,837	3,883	18	16	5	183.0	50.8	80
65	Nash*								
66	New Hanover...	21,080	9,212	36	17	18	170.8	85.4	444
67	Northampton...	9,665	3,702	8	8	2	82.8	20.7	0
68	Onslow.....	8,095	3,475	6	6	1	74.1	12.4	50
69	Orange.....	7,702	3,426	6	5	5	77.9	64.9	0
70	Pamlico.....	3,356	1,246	2	2	0	59.6	—	0
71	Pasquotank...	7,101	2,804	14	12	7	197.2	98.6	90
72	Pender.....	6,940	2,752	6	6	1	86.5	14.4	0
73	Perquimans...	3,108	1,191	5	5	1	160.9	32.2	0
74	Person.....	8,924	3,548	8	7	3	89.6	33.6	25
75	Pitt.....	22,169	9,118	23	19	8	103.7	36.1	65
76	Polk.....	4,144	1,879	4	4	2	96.5	48.3	28
77	Randolph.....	14,224	5,394	15	12	6	105.5	42.2	76
78	Richmond.....	13,130	5,359	15	12	6	114.2	45.7	90
79	Robeson.....	32,627	15,031	27	20	10	82.8	30.6	179
80	Rockingham...	19,817	8,235	25	22	15	126.2	75.7	124
81	Rowan.....	20,904	7,585	28	21	10	133.9	47.8	135
82	Rutherford...	14,593	5,482	12	11	6	82.2	41.1	64
83	Sampson.....	17,416	6,714	14	13	5	80.4	28.7	9
84	Scotland.....	9,246	4,098	7	7	2	75.7	21.6	0
85	Stanly.....	10,384	4,050	12	8	4	115.6	38.5	89
86	Stokes.....	7,662	2,825	2	2	1	26.1	13.1	0
87	Surry.....	15,163	5,862	16	15	11	105.5	72.5	120
88	Swain.....	4,439	2,151	4	4	1	90.1	22.5	26
89	Transylvania...	4,909	2,120	5	5	3	101.9	61.1	25
90	Tyrrell.....	1,738	663	1	1	0	57.5	—	22
91	Union.....	13,993	5,387	12	10	6	85.8	42.9	53
92	Vance.....	10,323	4,233	12	9	5	116.2	48.4	89
93	Wake.....	30,832	12,960	74	36	34	240.0	110.3	458
94	Warren.....	8,444	3,267	7	7	2	82.9	23.7	0
95	Washington...	4,506	1,966	6	6	1	133.2	22.2	6
96	Watauga.....	6,286	2,351	3	3	5	47.7	79.5	29
97	Wayne.....	19,281	7,748	31	23	10	160.8	51.9	150
98	Wilkes.....	15,811	6,242	11	8	5	69.6	31.6	50
99	Wilson.....	17,789	7,198	26	19	12	146.2	67.5	158
100	Yadkin.....	6,886	2,619	5	5	1	72.6	14.5	0
101	Yancey.....	6,016	2,300	2	2	1	33.2	16.6	0

*See Edgecombe-Nash.

Notes

1. Child population, estimated as of July 1, 1945.
2. Physicians and dentists in private practice in Winter, 1945-46.
3. Beds in general hospitals during 1945.

Appendix B. Physicians and dentists in private practice, by type of specialty in each county and each city with 10,000 or more population in North Carolina in Winter, 1945-46.

County and city	Number of physicians											Number of dentists				
	Total	General practitioners	Pediatricians	Other specialists							Total	General practitioners	Pedodontists	Orthodontists	Other specialists	
				Internal medicine	Allergy	Psychiatry and neurology	Surgery (except orthopedic)	Orthopedic surgery	Obstetrics and gynecology	Ophthalmology and otolaryngology						Radiology and anesthesiology
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
1 Whole State.....	1587	1093	39	96	4	9	161	10	44	112	19	659	635		12	12
2 Alamance.....	36	28	1	1			2		2	2		11	11			
3 Burlington.....	25	18	1	1			2		1	2		9	9			
4 Balance.....	11	10							1			2	2			
5 Alexander.....	5	5										2	2			
6 Alleghany.....	3	3										1	1			
7 Anson.....	10	9					1					3	3			
8 Ashe.....	4	4										2	2			
9 Avery.....	6	6														
10 Beaufort.....	15	11					2			1	1	5	5			
11 Bertie.....	5	5										1	1			
12 Bladen.....	6	6										2	2			
13 Brunswick.....	2	2										2	2			
14 Buncombe.....	80	37	4	12	1	1	12	1	2	8	2	35	32		2	1
15 Asheville.....	63	21	4	12	1	1	11	1	2	8	2	33	30		2	
16 Balance.....	17	16					1					2	2			
17 Burke.....	15	12		1			1			1		5	5			
18 Cabarrus.....	33	26					4		1	2		10	10			
19 Concord.....	20	15					4			1		5	5			
20 Balance.....	13	11								1	1	5	5			
21 Caldwell.....	11	10								1	1	8	8			
22 Camden.....	2	2														
23 Carteret.....	13	9					2			2		2	2			
24 Caswell.....	3	3										1	1			
25 Catawba.....	15	13					2					12	12			
26 Hickory.....	10	9					1					9	9			
27 Balance.....	5	4					1					3	3			
28 Chatham.....	7	6					1					2	2			
29 Cherokee.....	6	4					1			1		3	3			
30 Chowan.....	5	5										2	2			
31 Clay.....	1	1														
32 Cleveland.....	18	14		1			2		1			8	8			
33 Shelby.....	12	8		1			2					4	4			
34 Balance.....	6	6										4	4			
35 Columbus.....	15	13					1			1		6	6			
36 Craven.....	16	13	1	1					1			4	4			
37 New Bern.....	13	11	1						1			4	4			
38 Balance.....	3	2		1												
39 Cumberland.....	23	15	1	5			3			1		12	12			
40 Fayetteville.....	22	12	1	5			3			1		12	12			
41 Balance.....	1	1														
42 Currituck.....	2	2														
43 Dare.....	1	1														
44 Davidson.....	23	17	1	1			1			3		11	11			
45 Lexington.....	12	8	1	1						2		7	7			
46 Thomasville.....	8	6					1			1		4	4			
47 Balance.....	3	3										2	2			
48 Davie.....	3	3										4	4			
49 Duplin.....	11	11														
50 Durham.....	74	26	5	13		4	11	1	5	7	2	23	20		2	1
51 Durham.....	74	26	5	13		4	11	1	5	7	2	23	20		2	1
52 Balance.....																
53 Edgecombe-Nash.....	45	33	1	2			3		2	3	1	14	14			
54 Rocky Mount.....	20	11	1	2			2		2	1	1	11	11			
55 Balance.....	25	22					1			2		3	3			
56 Forsyth.....	83	38	4	10	1		15	1	5	7	2	40	37		2	1
57 Winston-Salem.....	79	34	4	10	1		15	1	5	7	2	37	34		2	1
58 Balance.....	4	4										3	3			
59 Franklin.....	8	8										4	4			
60 Gaston.....	37	31					3	1		2		13	13			
61 Gastonia.....	25	19					3	1		2		5	5			
62 Balance.....	12	12										8	8			
63 Gates.....	3	3														
64 Graham.....	1	1														
65 Granville.....	10	10										4	4			
66 Greene.....	5	5										1	1			
67 Guilford.....	106	52	6	10	1	1	15	2	6	11	2	49	45		1	3
68 Greensboro.....	68	27	4	10			9	2	5	7	2	34	30			
69 High Point.....	32	20	2				5		1	4		14	14			
70 Balance.....	6	5					1					1	1			
71 Halifax.....	25	21					2			2		7	7			
72 Harnett.....	14	13								1		7	7			
73 Haywood.....	12	10		1						1		8	8			
74 Henderson.....	19	17		1						1		4	4			
75 Hertford.....	6	6										4	4			1
76 Hoke.....	5	5										1	1			
77 Hyde.....	1	1														
78 Iredell.....	19	14		1			2			1		10	10			
79 Statesville.....	11	7		1			2			1		7	7			
80 Balance.....	8	7					1					3	3			
81 Jackson.....	4	4										5	5			

Appendix B (cont'd). Physicians and dentists in private practice, by type of specialty in each county and each city with 10,000 or more population in North Carolina in Winter 1945-46.

County and city		Number of physicians										Number of dentists					
		Total	General practitioners	Pediatricians	Other specialists							Total	General practitioners	Podontists	Orthodontists	Other specialists	
					Internal medicine	Allergy	Psychiatry and neurology	Surgery (except orthopedic)	Orthopedic surgery	Obstetrics and gynecology	Ophthalmology and otolaryngology						Radiology and anesthesiology
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)		
82	Johnston.....	19	17				1			1		7	7				
83	Jones.....	3	3									1	1				
84	Lee.....	8	7				1					4	4				
85	Lenoir.....	17	11	1	2		1		1	1		9	8			1	
86	Kinston.....	16	10	1	2		1		1	1		7	7				
87	Balance.....	1	1									2	1			1	
88	Lincoln.....	12	10		1					1		5	5				
89	McDowell.....	10	9				1					3	3				
90	Macon.....	5	4				1					3	3				
91	Madison.....	5	5									3	3				
92	Martin.....	5	5									3	3				
93	Mecklenburg.....	114	33	8	18	1	1	22	3	9	15	48	41		3	4	
94	Charlotte.....	107	26	8	18	1	1	22	3	9	15	47	40		3	4	
95	Balance.....	7	7									1	1				
96	Mitchell.....	4	4									3	3				
97	Montgomery.....	5	5			1						5	5				
98	Moore.....	18	16		1		1					5	5				
99	Nash*.....																
100	New Hanover.....	36	17	3	3			6				18	18				
101	Wilmington.....	35	16	3	3			6		2	4	18	18				
102	Balance.....	1	1														
103	Northampton.....	8	8									2	2				
104	Onslow.....	6	6									1	1				
105	Orange.....	6	5		1							5	5				
106	Paullico.....	2	2														
107	Pasquotank.....	14	12				1			1		7	7				
108	Elizabeth City.....	13	11				1			1		7	7				
109	Balance.....	1	1									1	1				
110	Pender.....	6	6									1	1				
111	Perquimans.....	5	5									3	3				
112	Person.....	8	7									1	1				
113	Pitt.....	23	19	1			2			1		8	8				
114	Greenville.....	11	7	1			2			1		6	6				
115	Balance.....	12	12									2	2				
116	Polk.....	4	4									2	2				
117	Randolph.....	15	12				2			1		6	6				
118	Richmond.....	15	12				1			2		6	6				
119	Robeson.....	27	20				2		2	3		10	10				
120	Rockingham.....	35	22				2			1		15	15				
121	Reidsville.....	12	10				1			1		6	6				
122	Balance.....	13	12				1					9	9				
123	Rowan.....	28	21		1		4			1	1	10	10				
124	Salisbury.....	20	13		1		4					9	9				
125	Balance.....	8	8							1		1	1				
126	Rutherford.....	12	11				1					6	6				
127	Sampson.....	14	13							1		5	5				
128	Scotland.....	7	7									2	2				
129	Stanly.....	12	8				2			2		4	4				
130	Stokes.....	2	2									1	1				
131	Surry.....	16	15				1					11	11				
132	Swain.....	4	4									1	1				
133	Transylvania.....	5	5									3	3				
134	Tyrrell.....	1	1														
135	Union.....	12	10				1			1		6	6				
136	Vance.....	12	9				1			2		5	5				
137	Wake.....	74	36	2	8	1	10	1	5	10	1	34	33		1		
138	Raleigh.....	57	19		8		10			10		25	24				
139	Balance.....	17	17									9	9				
140	Warren.....	7	7									2	2				
141	Washington.....	6	6									1	1				
142	Watauga.....	3	3									5	5				
143	Wayne.....	31	23				4			2	2	10	10				
144	Goldsboro.....	24	16				4			2		8	8				
145	Balance.....	7	7									2	2				
146	Wilkes.....	11	8		1		1			1		5	5				
147	Wilson.....	26	19				5			2		12	11				
148	Wilson.....	20	13							2		11	10		1		
149	Balance.....	6	6									1	1				
150	Yadkin.....	5	5									1	1				
151	Yancey.....	2	2									1	1				

*See Edgecombe-Nash.

Appendix C. Community health services for children during one year in each county and city of 50,000 or more population in North Carolina in 1944-45.

County and city of 50,000 or more population	Medical well-child conferences				Dental clinics		Public health nursing		School health services		Location of clinics					
	Number of sessions		Number of centers		Number of dentist- hours		Number of full-time public health nurses		Medical service	Nursing service only	Mental hygiene services	Services for physically- handicapped				
												Orthopedic and plastic	Rheumatic fever	Speech	Vision	Hearing
	Off.	Vol.	Off.	Vol.	Off.	Vol.	Off.	Vol.								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1 Whole State	5,067		234		27,235		357	11								
2 Alamance	37		1		360		5	1	*							
3 Alexander																
4 Alleghany							1									
5 Anson	71		1		390		4		*							
6 Ashe					420		1					*				
7 Avery					540		1		*							
8 Beaufort	36		3		150		2		*							
9 Bertie							2		*							
10 Bladen	64		4				2		*							
11 Brunswick																
12 Buncombe	353		9		960		11		*		*					
13 Asheville	133		5		570		8		*		*					
14 Balance	220		4		390		3		*		*					
15 Burke					150		1		*							
16 Cabarrus	24		2		840		7	1	*			*				
17 Caldwell					330		1		*			*				
18 Camden					120		1		*							
19 Carteret							3		*							
20 Caswell							1		*							
21 Catawba	24		12		520		2		*			*				
22 Chatham	36		12		210		2		*							
23 Cherokee	16		12		240		2		*							
24 Chowan	39		12		90		1		*							
25 Clay					210		1		*							
26 Cleveland	76		12		330		3		*							
27 Columbus	36		4		240		2		*							
28 Craven	63		12		6		6		*							
29 Cumberland	157		7		540		9		*		*					
30 Currituck	58		12		90		1		*							
31 Dare	24		5		240		1		*							
32 Davidson					330		2		*							
33 Davie	26		12		150		2		*							
34 Duplin	52		5		90		2		*							
35 Durham	354		2		2,088		19	1	*		*					
36 Durham	X		X		X		X	1	*		*					
37 Balance	X		X		X		X		*		*					
38 Edgecombe-Nash	180		14		1,380		10	1	*		*	*				
39 Forsyth	239		3		660		21	2	*		*	*				
40 Winston-Salem	X		X		X		X	2	*		*	*				
41 Balance	X		X		X		X		*		*	*				
42 Franklin																
43 Gaston	48		4		840		6	2	*			*				
44 Gates	18		3		150		1		*							
45 Graham					120		1		*							
46 Granville	50		3				3		*							
47 Greene	36		3		330		2		*							
48 Guilford	344		8		1,356		30	1	*		*	*				
49 Greensboro	240		6		576		18		*		*	*				
50 Balance	104		2		780		12	1	*		*	*				
51 Halifax	78		9		528		6		*							
52 Harnett	132		3		360		3		*							
53 Haywood	36		2		210		2		*							
54 Henderson					180				*							
55 Hertford	60		6				2		*							
56 Hoke							1		*							
57 Hyde					150		1		*							
58 Iredell							2		*							
59 Jackson	22		1				1		*							
60 Johnston	36		8		450		2		*							
61 Jones									*							
62 Lee					270				*							
63 Lenoir	39		4				5		*							
64 Lincoln	12		1		200		1		*							
65 McDowell									*							
66 Macon	37		1				1		*							
67 Madison									*							
68 Martin	60		4		420		1		*		*					
69 Mecklenburg	356		8		1,903		30	1	*		*	*				
70 Charlotte	X		X		X		26		*		*	*				
71 Balance	X		X		X		4		*		*	*				
72 Mitchell							2		*							
73 Montgomery	75		6		300		3		*							
74 Moore	57		6		180		4		*							
75 Nash ¹									*							

¹ See Edgecombe-Nash.
See notes at end of table.

Appendix C (cont'd). Community health services for children during one year in each county and city of 50,000 or more population in North Carolina in 1944-45.

County and city of 50,000 or more population		Medical well-child conferences				Dental clinics		Public health nursing		School health services		Location of clinics					
		Number of sessions		Number of centers		Number of dentist- hours		Number of full-time public health nurses		Medical service	Nursing service only	Mental hygiene services	Services for physically- handicapped				
													Orthopedic and plastic	Rheumatic fever	Speech	Vision	Hearing
		Off.	Vol.	Off.	Vol.	Off.	Vol.	Off.	Vol.	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)										
76	New Hanover	100		5		330		15					*		*		
77	Wilmington	X		X		X		X			*		*				
78	Balance	X		X		X		X			*		*				
79	Northampton	96		1				4		*	*		*		*		
80	Onslow	154		5				6					*	*	*		
81	Orange	36		2		180		4		*	*		*	*	*		
82	Pamlico												*	*	*		
83	Pasquotank	48		1		180		4		*	*		*	*	*		
84	Pender	102		2				2					*	*	*		
85	Perquimans	10		1		150		1			*		*	*	*		
86	Person	24		1		210		3		*	*		*	*	*		
87	Pitt	59		7		480		3		*	*		*	*	*		
88	Polk	100		4		150		2		*	*		*	*	*		
89	Randolph							3		*	*		*	*	*		
90	Richmond	86		4				2		*	*		*	*	*		
91	Robeson	84		7		390		4		*	*		*	*	*		
92	Rockingham					60		3		1	*		*	*	*		
93	Rowan	122		7		540		6		1	*		*	*	*		
94	Rutherford	105		2		420		2		1	*		*	*	*		
95	Sampson					360		4			*		*	*	*		
96	Scotland	36		2		360		2			*		*	*	*		
97	Stanly							4		*	*		*	*	*		
98	Stokes	41		2				2		*	*		*	*	*		
99	Surry							3		*	*		*	*	*		
100	Swain	12		1		120		1		*	*		*	*	*		
101	Transylvania	29		2				1		*	*		*	*	*		
102	Tyrrell							1		*	*		*	*	*		
103	Union	36		3		150		3		*	*		*	*	*		
104	Vance	22		2		180		2		*	*		*	*	*		
105	Wake	137		5		1,950		15		1	*		*	*	*		
106	Raleigh	X		X		X		X			*		*	*	*		
107	Balance	X		X		X		X			*		*	*	*		
108	Warren													*	*		
109	Washington	24		1				1		*	*		*	*	*		
110	Watauga					360		1			*		*	*	*		
111	Wayne	51		5		480		7		*	*		*	*	*		
112	Wilkes					300		2		*	*		*	*	*		
113	Wilson	60		4				2		*	*		*	*	*		
114	Yadkin	32		2		120		2		*	*		*	*	*		
115	Yancey					150		1		*	*		*	*	*		

Notes

1. Data given for a specific service in a city of 50,000 or more population, if reported separately.
2. Blank space indicates that specified service is not given in particular location, although service may be available elsewhere to residents of that county or city.
3. X indicates that allocation of particular service between city and county was not reported.
4. * indicates that specified service is given or clinic is located in particular county or city.









